# The Journal of Abnormal and Social Psychology

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# THE JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY

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Dr. Morton Prince

UNIV. OF MICH.

# THE JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY

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## EDITORIAL

Since the printing of the summer issue the JOURNAL has suffered an irreparable loss in the death of Dr. Morton Prince, who ended his long and distinguished career on August 31. No single person ever meant more to any one scientific periodical than did he to THE JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY. As founder, owner, and author of a large number of its editorials and many of its articles, he lived to see this child of his genius for authorship successfully fathered through more than twenty-three volumes of prosperous existence in which it, like himself, made the finely balanced appeal of scholarly value and popular interest. In the multiplicity of his varied interests there was nothing which commanded his more instant and complete enthusiasm than the welfare of the JOURNAL, which owes practically everything that it is to the more than twenty years of his unstinted devotion to building up its prestige.

Dr. Prince was born in Boston in 1854. After graduation from Harvard in 1879 he immediately began his medical studies at Harvard, Vienna and Strasbourg which were later to form the foundation of his especial approach to the field of psychology. As instructor in nervous diseases at the Harvard Medical School from 1895 to 1898, and as professor of diseases of the nervous system in Tufts College Medical School from 1902 to 1912 he gave an extraordinary impetus to the fields of neurology and abnormal psychology, not only by his teaching and clinical practice, but more widely still by the publication of contributions to the sciences of medicine and psychology which gave him an eminence in this country closely paralleling that of Janet in France. His three main psychological works, "The Nature of Minds and Human Automatism"; "The Dissociation of a Personality"; and "The Unconscious" gave him undisputed rank as the foremost American in the psychological study of the unconscious, and made the name

Sally Beauchamps the prototype of all later American studies in dissociated personality. His literary activity was continuous almost up to the end of his life, and comprised, in addition to his main works, more than one hundred monographs on medical and psychological and philosophical subjects. In 1911 he was elected president of the American Neurological Association after having served previously as president of the Boston Society of Psychiatry and Neurology and of the American Psychopathical Association. Tufts honored him with the degree of LL.D. in 1910 and Harvard with a professorship of abnormal psychology in 1926.

Dr. Prince exemplified in an eminent degree the principle that a psychologist, in order to be great, must be more than merely a psychologist. It was from a wide experience in medicine that he entered the field in the first place, and it was his brilliant sorties into the broader field of human service that finally crowned his distinguished career. In recognition of his services in many interests during the war he was decorated by the Order of the Chevalier of St. Sava of Serbia in 1916; the Order of the Rising Sun of Japan in 1918; by the Cross of the Legion of Honor of France in 1919; and by the Royal Order of the Red Cross and Order of the White Eagle of Serbia in 1920. Illustrious tribute was paid to him by Dr. Marcel Knecht at the time of his decoration with the Cross of the Legion of Honor in these words: "Dr. Morton Henry Prince, eminent Bostonian, patriotic American, faithful friend of my country, on behalf of the Government of the French Republic and of the French ambassador, I bestow upon you the Cross of Knight of the Legion of Honor, which is a token of love and of gratitude, not only for you personally, but also to the illustrious city, mother of literature, of science and of arts."

It is the warming spirit of these words that Dr. Prince brought to the service of psychology, a spirit profoundly learned, but never pedantic, always scholarly but always insistent on the preëminent value of service. His going leaves the ranks of American psychologists greatly diminished, and his loss to THE JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY is immeasurable.

# EUGENIC STERILIZATION IN CALIFORNIA

## 18. Effect of Vasectomy on the Sexual Life

By PAUL POPENOE
PASADENA, CALIFORNIA

WHEN sterilization is suggested to any man, the first question he asks is usually as to what the effect will be on his sexual life. An answer to this question was therefore sought as part of a comprehensive study of the workings of the California eugenic sterilization law, which has been under way for more than three years, financed and directed by E. S. Gosney, a Pasadena philanthropist, with the advice of a board of consultants made up of experts in many different lines.[1]

The problem was complicated by the fact that such widely differing opinions have been expressed on it. Offhand, many biologists would agree that there should be no observable effect whatever, except prevention of parenthood. The operation is performed under local anesthesia through a slight incision on the front of the scrotum on each side through which the vas deferens, that conducts the spermatozoa from the testicle to the penis, is cut and tied off. It is almost bloodless, requires but a few minutes, does not remove any gland or organ, nor interfere with any blood or nerve supply. It may be an office procedure, but is better done in hospital, except by experts.

On the one hand, however, some surgeons and institution superintendents in the past have lauded the operation as tending to "calm the sexual appetite", diminish masturbation, and make the patient more easily handled. On the other hand, followers of E. Steinach have recommended the same operation as a means of "rejuvenation", "reactivation", "revitalization", and the like, alleging that in certain selected cases it reinvigorated the whole system and especially the sexual life.

### MEN IN STATE HOSPITALS

The material primarily available to us consisted of the patients sterilized in the California institutions for mental diseases and

[1]A list of the papers previously published in this series will be sent on application to E. S. Gosney, 26 N. Marengo Avenue, Pasadena, Calif. The whole investigation has been summed up in popular form in a book, *Sterilization for Human Betterment*, by E. S. Gosney and Paul Popenoe.

mental deficiency; but this material was not well suited to settle the question at issue. The institutional type of feebleminded male has little sexual drive [2] and in any case his testimony would not be of much value because of his intellectual limitations. The mentally diseased male is almost always marked by disturbed sexual behavior, hence his testimony might be quite misleading.

No effort was made to get information on this point from the feebleminded, but letters were sent out by the superintendents of the state hospitals for mental diseases,[3] to as many of their paroled or discharged patients as could be reached, asking for a statement of experience. The replies are summarized in Table I. It will be

TABLE I

LIBIDO OF MALES PAROLED FROM STATE HOSPITALS FOR MENTAL DISEASES AFTER VASECTOMY

| Time Elapsed Since Operation | Greater than Before | No Change | Less than Before | Total |
|---|---|---|---|---|
| Less than one year | 4 | 4 | 1 | 9 |
| One year, less than two | 3 | 8 | | 11 |
| Two years, less than five | 1 | 2 | 1 | 5 |
| Five years, less than ten | | 2 | 1 | 3 |
| Ten years or more | 1 | 6 | 2 | 9 |
| Totals | 9 | 22 | 5 | 36 |

easily understood that many men find an increase of sexual activity after release from the hospital, as compared with their life before sterilization, because in the earlier period they were suffering from psychoses, which means that they were physically as well as mentally affected. A few would be expected to report a decrease in libido, partly because of advancing age, partly because of the sort of incidental factors that are constantly in operation,—mental attitude, reactions of wife, and the like. So far as it goes, then, this evidence could probably be considered favorable to the view that vasectomy does not produce any noticeable change in the patient's sexual life.

To get more acceptable evidence, we enlisted the coöperation of surgeons who have been performing vasectomies on normal men,[4] and sent out a detailed questionnaire calling for information

[2] Popenoe, Paul. "Marriage after Eugenic Sterilization." *Proceedings* of the 52nd Annual Session of the American Association for the Study of the Feebleminded (comprising the *Journal of Psycho-asthenics*, Vol. 33), pp. 62–76, 1928.

[3] Popenoe, Paul. "Attitude of Patients Toward the Operation." *Journal of Social Hygiene*, 14 (5):280–285, May, 1928.

[4] For their coöperation in making this study possible, we are greatly indebted to our collaborators: Dr. A. Elmer Belt, Los Angeles; Dr. Harry Benjamin, New York City; Dr. Louie Felger, Los Angeles; Dr. C. M. Howell, Osceola, Ark.; Dr. G. B. McCrary, Palo Alto, Calif.; Dr. S. E. Sanger, Monrovia, Calif.; Dr. A. A. Thurlow, Santa Rosa, Calif.; and Dr. J. S. Trewhella, Montebello, Calif. Several intelligent patients also sent in their own histories without intermediation of surgeons.

on 34 points concerning the sexual life before and after sterilization.[5] We received 65 histories, nearly all of them quite complete and evidently made up with a great deal of thought and candor.

These patients were sterilized on their own initiative; they are above the average in intelligence, as judged not only by their answers but by their social and economic status. Their occupations, classified according to F. W. Taussig's familiar scheme, are:

| | |
|---|---|
| Professional | 12 |
| Semi-professional and business: | |
| (a) higher group | 6 |
| (b) lower group | 12 |
| Skilled labor | 25 |
| Semi-skilled or partly skilled | 5 |
| Common labor | 2 |
| Not stated | 3 |
| | 65 |

This distribution contrasts strikingly with that of the insane men sterilized in the state institutions of California, among whom common laborers make up nearly one-half of the totals.[6]

Asked as to the motive for sterilization, 36 replied frankly that it was for convenience, to prevent the birth of additional children (in a few instances, to prevent the birth of any children at all); it was merely a substitute for the ordinary methods of "birth control". Three who said they had as many children as they could afford ("economic motive") should be added to this group. Five claimed a eugenic motive, although this is not always convincingly stated, as when one man explains, "Asthma in wife's family." Fourteen stated that the operation was requested because of the desire or need to protect the wife's health; six were seeking rejuvenation in the sense of Eugen Steinach[7]; one failed to state.

[5] A copy of this questionnaire will be sent to any student interested, on application to Mr. Gosney.

[6] Popenoe, Paul. "Economic and Social Status of the Sterilized Insane." *Journal of Social Hygiene*, 14 (1):23–32, Jan., 1928.

[7] The testicle is made up principally of small, tightly-coiled tubes (the seminiferous tubules) which comprise some 70 per cent of its bulk, and in which the spermatozoa are formed. Between these tubes there is an interstitial tissue, making up about 10 per cent of the bulk of the testicle; the remaining 20 per cent is connective tissue. A quarter of a century ago P. Bouin and P. Ancel founded the theory that the interstitial tissue is the source of the testicular hormones—a theory that is widely attacked and still debatable. Adopting this theory, E. Steinach decided in 1918 that if the seminiferous tubules could be brought to atrophy (which he thought would result from tying the vas deferens and thereby producing pressure from accumulating secretions) the interstitial tissue would increase in amount and activity, by compensation, and thus furnish more hormones to the body. This is the basis of his "rejuvenation" operation. The results are claimed to be so great that it is usually not necessary to operate on both testicles—one is sufficient. (This also permits the subject still to have children.) Since our study was based on bilateral vasectomy, we were unable to get many cases that had been operated on primarily for rejuvenation.

Age at operation ranged from 18 to 72, the mean being 36 years. The full distribution is shown in Table II.

TABLE II

LIBIDO REPORTED AFTER VASECTOMY BY 65 NORMAL MEN COMPARED WITH THEIR CONDITION BEFORE VASECTOMY

| Age at Operation | Greater than Before | No Change | Less than Before | Total |
|---|---|---|---|---|
| —24 | | 8 | | 8 |
| 25–29 | 1 | 10 | | 11 |
| 30–34 | 1 | 10 | | 11 |
| 35–39 | 1 | 12 | 1 | 14 |
| 40–44 | 2 | 6 | | 8 |
| 45–49 | 1 | 2 | 1 | 4 |
| 50–54 | 1 | 2 | | 3 |
| 55–59 | | 3 | | 3 |
| 60–64 | 1 | 1 | | 2 |
| 65–69 | 1 | | | 1 |
| | 9 | 54 | 2 | 65 |

RESULTS SATISFACTORY

This table also shows that only two of the number reported a decrease in virility after the operation. One of these, a professional man, is probably to be considered sexually abnormal to start with. Due to mumps in adolescence, his testicles were reduced to mere nodules, about 1.5 c.m. in diameter, but without any diminution of his potency, for he had been accustomed prior to the operation to have sexual intercourse seven times a week, and to prolong it each time through two orgasms. Since the operation, he reports that he is able to have coitus only five times a week, and with only one orgasm each time. It is obvious that such a man might have found his potency decreased with the passage of time, even if the operation had not intervened.

From Table III it will be evident that the results of the operation, on the whole, are satisfactory to the men. The two who described themselves as moderately pleased are the two already mentioned who reported a decrease in sexual activity; the one individual who is displeased is a carpenter who was habitually intoxicated and had as large a family as he could support. His wife gave him the choice of vasectomy or divorce. He accepted the operation, and while the results have been entirely satisfactory so far as his sexual life is concerned, and the family was kept together, he resents the fact that he was forced to it against his will; as his wife puts it, "He is still grouchy about it."

In reply to the direct question, "Knowing what you now do,

if you had it to do over again, would you have the operation performed?", the answers were distributed almost the same as in Table III. Only two individuals answered in the negative, while one omitted the question but his other answers show that he was satisfied with the results.

Replies to the question, "How long were you incapacitated from comfortably carrying on your usual work, as a result of the operation?" were as follows:

| Days Lost | Number Reporting |
|---|---|
| 0 | 21 |
| 1 | 5 |
| 2 | 5 |
| 3 | 11 |
| 4 | 6 |
| 5 | 5 |
| 6 | 1 |
| 7+ | 7 |
| Not stating | 4 |
| | 65 |

The men were asked whether they had noticed any change in either physical or mental health since the operation. Forty-seven had seen no change at all; five felt no change in body but thought they were better off in mind; four saw no mental change but considered that their bodily health was improved; nine believed that they had improved in both body and mind.

TABLE III

SATISFACTION OF NORMAL MEN WITH VASECTOMY CORRELATED WITH NUMBER OF YEARS ELAPSED SINCE THE OPERATION

| Number of Years | Well Pleased | Moderately Pleased | Displeased | Total |
|---|---|---|---|---|
| 1 | 18 | 1 | | 19 |
| 2 | 10 | | | 10 |
| 3 | 5 | 1 | | 6 |
| 4 | 2 | | | 2 |
| 5 | 3 | | | 3 |
| 6 | 3 | | | 3 |
| 7 | 2 | | | 2 |
| 8 | 4 | | | 4 |
| 9 | 2 | | | 2 |
| 10 | 2 | | | 2 |
| 11 | 2 | | 1 | 3 |
| 12 | 1 | | | 1 |
| 13 | | | | |
| 14 | 3 | | | 3 |
| 15+ | 5 | | | 5 |
| | 62 | 2 | 1 | 65 |

SEXUAL LIFE AFTER OPERATION

Some pains were taken to inquire as to the details of the sexual life, in order to have objective data for an opinion as to whether this had been altered by the operation. Apparently vasectomy produces no effect on the ability to control the length of intercourse. One said that he was "somewhat less controlled"; two that they were "more controlled" afterward; one said he had learned control only since vasectomy. Six declared they had always had the ability and that the operation had made no difference; six simply said "no change" without indicating whether they had the ability or not; six failed to answer; 43 said they had not and never had had the ability. From this sample it would appear that only about one man in five has learned to prolong or shorten the duration of coitus at will.

Four of the informants stated that the post-orgasmal erection continued longer after the operation than before; seven found this period shortened; 47 noted no change in this respect; seven failed to answer. Age seemed to play no part in the result. An estimate of the average length of time during which this erection continued was given by 36, varying from "a few seconds" up to several hours. Too great exactitude would not be expected of such estimates. The material was not in shape to permit the calculation of a product-moment correlation, but the correlation ratio with age was found to be .58 ± .08, the younger men showing more prolonged erection while among the older men the penis tended to relax rapidly after an orgasm. For statistical reasons as well as others not much weight can be attached to the exact figures, but the finding is in line with general experience. With the small number of cases available (35), no association could be demonstrated between duration of normal post-coital erection and the ability to prolong or shorten the act of intercourse at will, bi-serial r being only .05.

About half of the informants (32) stated that there had been no change in frequency of intercourse since the operation; 11 reported less frequent and 13 more frequent coitus, while nine failed to answer on this point. The diminution can be explained plausibly by difference in age, since those who reported it averaged nearly 10 years since the operation, as compared with 5.34 years for the entire group; and the correlation ratio between change in frequency and number of years since operation is .56 ± .07. Here

again the general conclusion would seem to be that the operation in itself results in no change in the frequency of coitus.

Asked as to whether the duration of the act of coitus showed any change, none of the informants reported a decrease. Seven failed to answer; seven said it was somewhat more prolonged than previously; 51 found no change. In at least one case the operation was performed partly to cure ejaculatio praecox, and the desired effect followed (whether due to the operation or to the instillation of silver nitrate in the urethra is another question), hence the report was "longer"; another man suggested that the increased duration of intercourse in his case was probably due to the fact that he had intercourse more frequently since sterilization. On the whole, we seem here again to be forced to conclude that there is no evidence of any change produced by the operation as such.

In reply to the question, "Do you notice any difference in the amount of pleasure produced by sexual intercourse? If so, is it greater or less than was customarily experienced before the operation?", 38 noticed no change, 18 felt an increased pleasure, four a decrease, and five failed to state. Of the four who report a decrease, one is the abnormal individual already mentioned; the other three are aged 59, 62, and 72 respectively and increasing years can with some confidence be charged with responsibility in the case. Of the 18 who reported increased pleasure, and who go into any detail on this point, all seem to attribute the result to mental factors, *e.g.*, "Wife doesn't hurry me so much"; "We don't have to separate so soon"; "More experience and appreciation"; "More pleasurable because longer duration"; and most frequently, "Because fear of pregnancy removed". This last-named factor was found to be the most important in the large proportion of women who reported a betterment of their sexual life after salpingectomy.[8] There is no evidence from our male cases that the improvement is on any other basis than that in the female; or in other words, there is no evidence that any physiological change has taken place. The evidence is of course only subjective.

### FEW COMPLAINTS

Subjects were asked, "Do you notice at any time any particular sense of fulness or discomfort in the scrotum or testicles? If so, is this feeling more intense and prolonged, or less so, than the similar feeling prior to the operation?" Sixteen men definitely

[8] Popenoe, Paul. "Effect of salpingectomy on the sexual life." *Eugenics*, I (2): 9–23. Nov., 1928.

expressed familiarity with the feeling of pain in the testicles, although one of these said it was only before his marriage, so he might well be counted out. Of those who were worse, one said he had the feeling several times during the first few years, but could recall none during the past 10 or 15 years; a second said, "At times rather sharp, drawing pain in the right testicle; may not be due to operation"; a third, "Slight fulness not noticed prior to operation; worse when sexually excited." Others noted fulness, or had done so in the past, when excited, after vigorous coitus, and so on. Summarizing the answers in the usual way, 54 saw no change in this respect, four noticed greater or more frequent fulness, four noted less, three did not answer.

Question No. 28 was, "After an orgasm, do you get prompt and complete relief from any feeling of tension and testicular repletion, or is there a more or less prolonged feeling of distension and discomfort, due for example to distension of the epididymis? If the latter how long is this discomfort noticeable?" Two failed to answer; two said "Usually"; and one, a waiter 33 years old, sterilized three years ago, and accustomed to coitus about twice a month, said, "Prolonged discomfort unless I masturbate after intercourse." The rest without exception said that the orgasm gave them prompt and complete relief, though four stated that they frequently required a second or third consecutive orgasm to reach this condition of repose.

Answering the question, "Do you ever notice any pain or drawing feeling in the scrotum, testicles, or cord? If so, when does it occur and how long does it last? Was it also noticed before vasectomy?" Seven did not answer, three said "not now", three said they occasionally felt it, but had also felt it, and more markedly, before vasectomy. One said, "Always when aroused and before intercourse", without stating definitely whether this remark applied also to the period before vasectomy. One said he had occasionally noticed a drawing feeling in the cord, after frequent coitus; he could not recall it before vasectomy but as the operation was about 20 years ago he might be mistaken. One said he noticed it at the time he had influenza; the remaining 49 said they had noticed no such discomfort.

### TWO TYPES OF OPERATION

The answers to the three questions last mentioned might be affected by the type of operation. In some cases the lower end of the vas deferens is tied, in others it is left open and only the

upper end tied. In the former case, it is supposed by E. Steinach and his school that a pressure is set up in the epididymis and seminiferous tubules which alters the internal structure of the testicle;[9] in the latter case it is supposed by some that the testicular secretions, being poured into the scrotum instead of carried off through the penis, are absorbed and "tonify" the system. Without going into the merits of either of these assertions, we can only point out here that the distinction is largely imaginary, because when the lower end is left open, both clinical and experimental[10] evidence show that it may soon close through the proliferation of connective tissue around it; so that the final result is the same.

In 13 of the cases here studied, both ends of the cut vas were ligated; two failed to state; 50 were ligated only at the upper end. Because of the diversity of ages and physical conditions, which make accurate comparisons impossible, our study throws no light on the relative merits of the two methods, even if the lower end could be trusted to remain open,—and it can not. If it does remain open, its secretions are absorbed readily in the scrotum, for palpation of a number of scrota revealed no evidence of any accumulation of solids or fluids around the point of resection of the vas. The most that can be said from our data is that, for eugenic purposes, both methods seem to give satisfactory results and to please the patients.

In short, normal married men who have been sterilized in private practice are virtually unanimous in agreeing that the results are entirely satisfactory to them. No failures are reported, and few or no untoward results are recorded that seem to be due to vasectomy. Our somewhat detailed inquiry on this point brought to light a few slight inconveniences in connection with sexual intercourse, as set forth above, but these were in every case inconveniences of the same kind that unsterilized men experience. Such improvement in the sexual life as is reported can be explained as psychic; but in any event, it is pretty clear that vasectomy does not interfere with the normal sexual life of these men.

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[9] In order to accentuate this result, Dr. Steinach during the last few years has begun to tie off individually the dozen or more efferent ducts of the rete testis, close to the testicle, instead of making a single cut and tie in the vas. Few of his disciples have yet adopted this practice.

[10] Dr. Robert M. Oslund, associate professor of physiology, University of Illinois College of Medicine (Chicago), informs us that he has found this to be the case in a large proportion of the dogs, rats, and guinea pigs on which he has performed experimental vasectomy.

### CONTRADICTORY REPORTS

The reports of earlier operators, especially institution superintendents, who thought that vasectomy resulted in a diminution of sexuality, are probably based on at least two different factors. In the first place, when the operation was new and not well understood, a suggestible patient may have feared, or even have been told, that he would be less highly sexed afterward. Mental mechanisms would produce the suggested effect. In the second place, care, discipline, and improvement in mental and physical health in the institution might lead to a reduction of masturbation, for instance; and this result might be credited to the operation.

We regret that our material so far does not permit us to throw any light on the question of whether vasectomy produces a sexual improvement in the manner credited to the Steinach operation by its proponents. The half dozen patients who underwent it for this purpose all express themselves as satisfied with the effects; but having paid for these effects and having expected them, they too might find them for psychic reasons. Some other patients state that they found an increase of sexual activity immediately after the operation, due presumably to local irritation, but that this soon subsided. Dr. Steinach and his followers, on the contrary, claim that results from the "reactivation" operation should not be expected for several months. Nearly all of the subjects of our study are healthy, normal men, who (as will be shown later) are rather more active sexually than the average, and a "reactivating" result might not be expected in their cases, since Dr. Steinach and his followers emphasize that results are to be expected only when there is a lowered sexuality, due to glandular inactivity, in an otherwise healthy individual. The failure of most of our subjects to find any physiological increase in libido therefore does not necessarily prove that the theory of stimulation of the interstitial tissue by vasoligation is ill-founded. Neither does it necessarily disprove it, and we must wait for further, more abundant material before making any contribution on this point.

### NORMAL SEXUAL ACTIVITY

Before the whole problem is laid aside, it is important to know whether these men are a normal lot whose experience can be taken as representative, or whether they are an abnormal lot whose experience would not apply to normal men.

Physically and mentally, we have already mentioned that they

appear to be an average sample of the more intelligent part of the population. Their testimony should be entirely competent. It remains to ascertain whether they are also an average sample from the point of view of sexual activity.

The best test of this that our data can furnish is the frequency of intercourse. Our figures apply only to the time after vasectomy; but it has been shown above that there was little or no change in this respect after the operation, as compared with before. Is the sexual life of these men representative of that of the average, healthy, unsterilized, married man?

Katharine Bement Davis has published details of the sexual life of a thousand intelligent married women, who stated the frequency of their own coitus.[11] It is a simple assumption that the frequency of intercourse of the husbands was the same as that of the wives; and the data are compared with our own in Table IV. The agreements and divergences of the two sets are shown graphically in Fig. 1. Considering the small size of our sample, the agreement of the two sets is as good as could be expected. The half dozen (all middle-aged or elderly men) in our list who had sought "rejuvenation" (therefore were presumably below par sexually) help to increase abnormally the percentage in our column who reported infrequent intercourse. The age distributions of the two groups (not known for that of Dr. Davis) can not be identical, and this would introduce another discrepancy. Subject to these qualifications, we should conclude from this comparison that the men who furnished us their histories represent quite a normal lot.

TABLE IV

FREQUENCY OF INTERCOURSE OF INTELLIGENT MARRIED MEN IN THE UNITED STATES

| | K. B. Davis' Data | | Our Data | |
|---|---|---|---|---|
| Frequency | Number | Per cent | Number | Per cent |
| Once a day or oftener | 90 | 9.88 | 4 | 6.89 |
| More than twice, less than seven times a week | 305 | 33.48 | 24 | 41.38 |
| Once or twice a week | 391 | 42.92 | 13 | 22.41 |
| Once to three times a month | 125 | 13.72 | 17 | 29.32 |
| Totals | 911 | 100.00 | 58 | 100.00 |

The only other extensive body of data known to us is that concerning 257 men published by Raymond Pearl.[12] Comparison with his study is not easy, however. In the first place, Dr. Pearl's

[11] Davis, Katharine Bement. "A Study of the Sex Life of the Normal Married Woman. III. The Happiness of Married Life." (Table X.) *Journal of Social Hygiene*, 9 (3): 129–146, March, 1923.

[12] Pearl, Raymond. *The Biology of Population Growth*. New York, 1925.

histories were furnished by old men (three-fourths of them were over 60) who undertook at an age when their sexuality had declined, to think back over their entire past lives and give detailed statements as to the frequency of coitus for each decade. It would not be surprising if they had unconsciously misrepresented, perhaps exaggerated, the record of their younger days. In the second

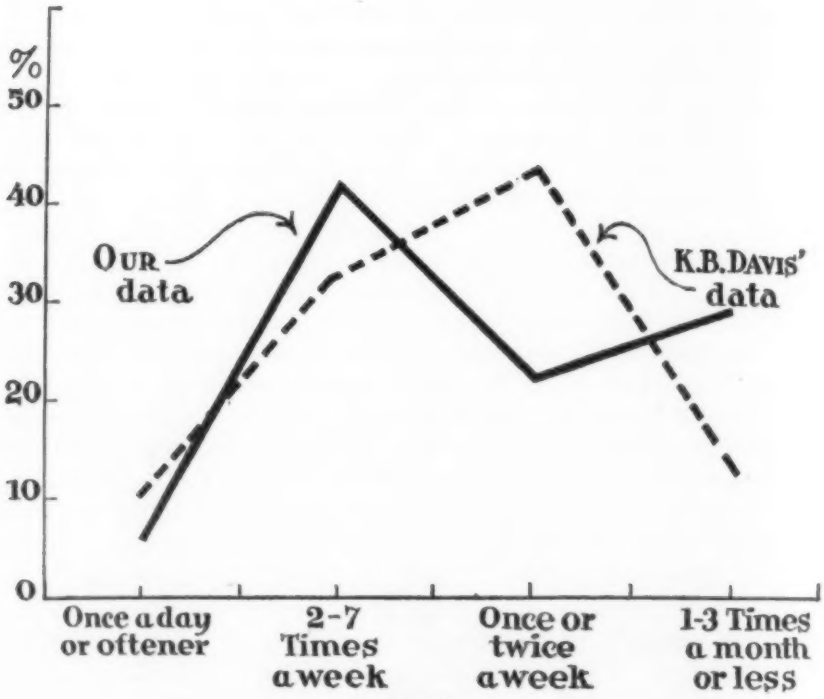


**FIG. 1.**
**Frequency of Coitus in American Marriages**

place, their recollections seem to make no allowance for pregnancy on the part of their wives, although Dr. Davis' figures [13] show that only one married couple in four continues intercourse during the entire period of pregnancy, while one in eight suspends it during the whole course of gestation. In the third place, while these old men were presumably all married, or had previously been married, when they made up their reports, the record covers their earlier decades when many of them were single, and this introduces an

[13] *Op. cit.*, Table XII.

element that not only disturbs, but for some purposes vitiates the record. The figures in the early decades of Dr. Pearl's curves and tables are too low, because they include unmarried men whose sexual activity was presumably less than that of married men of the same age.

The most nearly legitimate comparison for our purposes seems to be between our own curve and the curve he has prepared [14] for 67 men who married between the ages of 20 and 24. This group probably represents the maximum of sexuality, as he himself points out; yet Fig. 2 shows that its sexual activity is less than that of our own group of sterilized individuals, even at the extreme upper

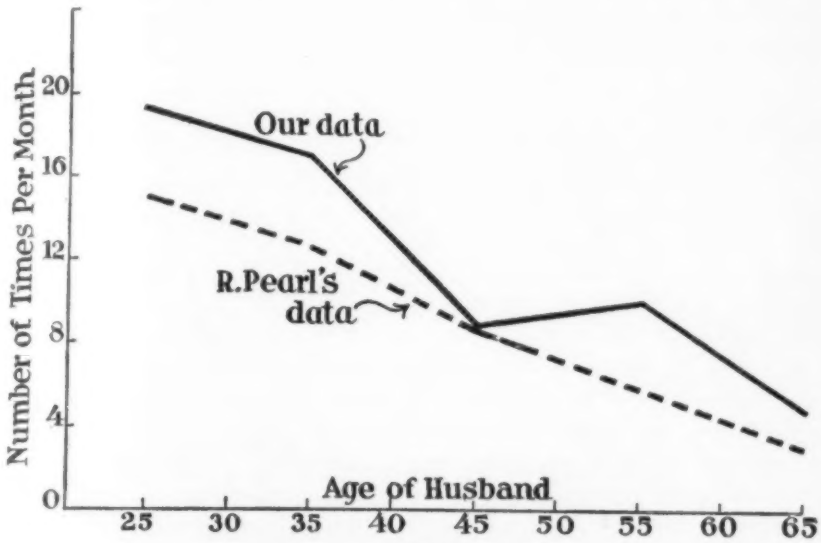


**FIG. 2.**
**Frequency of Coitus in American Marriages**

end where our group is composed largely of men who had themselves sterilized because of diminishing sexual potency and declining physical vigor, which they hoped to overcome by "revitalization".

### HIGH VARIABILITY

The variability of our group in respect of frequency of intercourse is remarkably high, the coefficient of variability being $118.87 \pm 7.80$, which is higher than any of the coefficients (ranging

[14] *Op. cit.*, p. 191.

from 81 up to 116) given by Dr. Pearl for his subjects in spite of the fact that the latter, at least among the earlier years, included men who were not married.

The amount of this variation that is due to age can be measured approximately by calculating the product-moment correlation between age and frequency of coitus.[15] This turns out to be $-.51 \pm .07$, from which the coefficient of alienation $k^2 = .75$, showing that the frequency of coitus is determined to the extent of only one-fourth by a man's age. The other three-fourths of the variability are made up of all other factors put together, such as physical constitution of husband and wife, mental attitudes, and opportunity. For convenience of comparison, we have here thrown our data into the same form as that used by Dr. Pearl, and present them in Table V (from which it will be found that $r = -.50 \pm .06$).

TABLE V

FREQUENCY OF COITUS CORRELATED WITH AGE (NORMAL MARRIED MEN, STERILIZED)

| Age at Report | Number of Times Per Month that Sexual Intercourse is Reported | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0–4 | 5–9 | 10–14 | 15–19 | 20–24 | 25–29 | 30 | Total |
| –29 | 2 | | 2 | 2 | | | 4 | 10 |
| 30–39 | 7 | | 2 | 5 | | | 7 | 21 |
| 40–49 | 5 | | 5 | 2 | | | | 12 |
| 50–59 | 7 | 1 | 2 | | | | | 10 |
| 60 + | 6 | | | 1 | | | | 7 |
| | 27 | 1 | 11 | 10 | | | 11 | 60 |

Now if to our data shown in Fig. 2 a straight line be fitted by the method of least squares, the equation is $y = 23.09 - 3.67\,x$ (where x is in terms of decades), from which the probable frequency of coitus at any age can be calculated readily. The curve touches zero at 77 years, beyond which, on the average, no sexual activity would be expected. It is interesting to note that the slope of this theoretical curve is about the same as that of Dr. Pearl's empirical curve in Fig. 2, though the actual figures are a little higher at every point. This substantial agreement increases the confidence with which one can draw conclusions from such small bodies of data. If the peak of sexual activity is somewhat prior to the age of 20,—say 17, for convenience,—and the vanishing point at 77, there is a steadily declining virility during a period of 60

[15] The correlation surface is not published here, since the same material is given in slightly different form in Table V. All of the data on which this paper is based are accessible for inspection in Mr. Gosney's office, and a copy of the data on any particular point will be sent to any interested student who wishes to verify our conclusion, or to use it for any other purpose.

years; and the average man may figure that his sexual capacity is one-fourth gone by the age of about 30, half gone at 45, and three-fourths gone in the early sixties. Of course it would not do to take these theoretical calculations too seriously, in view of the fact already pointed out that age is responsible for only one-fourth of the variation in sexual activity.

The fact that the sexual activity of the group of sterilized men is greater at all ages than that of Dr. Pearl's subjects may be due to selection on either side or on both. As to whether his subjects (who were found by following up hospital records of prostate operations) were undersexed, there seem to be no data for making even a guess. But one might guess that ours represent a relatively highly sexed group of men; otherwise they would not have taken the trouble to seek out and pay for an operation which was motived in most cases, as previously shown, principally by the desire to have free coitus without risk of parenthood. Whatever the fact may be in this connection, it seems fairly clear that they are not below par. Neither are they so far above par as to be pathological, as the comparison with the marriages studied by Dr. Davis shows.

Without pressing comparisons too far, in a field where individual variability is so great and where some allowance must be made for inaccuracy of records (few men keep diaries recording the frequency of marital intercourse, and general impressions may be colored by many emotional influences), we deem ourselves justified in concluding that there is nothing particularly abnormal about the sexual lives of the group of men whose histories we studied, but that they are a fair representation of white American males with active sexual dispositions. They have found that vasectomy has no untoward effect on these dispositions. In almost every case they express complete satisfaction with the operation.

### WIVES ALSO SATISFIED

A final question remains,—what do their wives think of the operation? The question is answered quickly; with a single exception they approve of it, in most cases enthusiastically, according to their husbands. The one exception is a woman whose husband is not faithful to her; while the result of vasectomy has been entirely satisfactory so far as her own sexual life is concerned, she feels that it makes it easier for her husband to seek gratification elsewhere, and would be glad if he were not sterilized, in the hope that he might be somewhat restrained by fear and anxiety from breaking his marriage vows. The exception therefore does not

bear on the primary question. No other wife has reported any regret over the operation, but in most cases the removal of fear of unwanted pregnancy has operated favorably on the wife,—doubtless even more so than on the husband.

SUMMARY

1. Of 36 men committed to the California State hospitals for mental diseases, and there vasectomized, 22 stated that they had noticed no change in their sexual life since the operation, nine reported an increase in sexual activity and enjoyment, five a decrease. Most of the five last-named had been away from the hospital for some years.

2. Histories were got from 65 normal men who had undergone vasectomy voluntarily. They were above the average of the population in intelligence, nearly all being professional or business men or in the class of skilled labor.

3. The majority of these men had themselves vasectomized merely because they did not want any more children. Five claimed a eugenic motive and six looked for "rejuvenation".

4. Their age at operation ranged from 18 to 72 years, the mean being 36. The time elapsed since operation ranged from a few months to more than 20 years, the mean being five years.

5. Only two of the number reported any decrease in virility after the operation. One of these was apparently abnormal to begin with.

6. That they were well pleased with the results of the operation was the verdict of 62 of the men; two were moderately pleased, one dissatisfied. The two who were moderately pleased were those who reported a decrease in virility; the one who was displeased was a man who was forced by his wife to undergo vasectomy as an alternative to divorce, and he had no complaint to make about the operation, except that he was still indignant that he had let his wife have her way 11 years earlier.

7. Two said they would not have the operation done, if they had it to do over again and knew what they now know; 62 said they would; one failed to answer.

8. One-third of the men reported that they were not incapacitated from work for a single day, by the operation. The rest found it necessary to lay up for a period varying from one day to one week, the most frequent report being a lay-off of three or four days.

9. No change in mental or physical health was seen by 47; the

others thought that they had improved in one of these respects or in both. None reported a deterioration in either respect.

10. The operation seemed to make no difference in the ability of the man to control the duration of coitus. Only one in five of the group had learned to exercise such control, either before or after vasectomy.

11. The length of time during which erection continued after the orgasm varied from "a few seconds" to several hours, being longer in the younger men. It was not affected by the operation. It was not associated with ability to control duration of intercourse.

12. About one-half of the informants stated that there had been no change in the frequency of coitus after the operation, as compared with their marital habit before. Less frequency was reported by 11, greater frequency by 13. Diminution of frequency was associated with greater age, the operation itself seeming to produce no change in this respect.

13. None of the informants reported any decrease in the duration of coitus after vasectomy. Seven reported a slight increase; 51 found no change.

14. In reply to the question, "Do you notice any difference in the amount of pleasure produced by sexual intercourse?", 38 noticed no change, 18 felt increased pleasure, four a decrease, and five failed to answer. Of those who reported a decrease, one is considered abnormal, the other three are old men. Mental factors seemed to be responsible in the case of those who found coitus more pleasurable after vasectomy.

15. The operation was not found to result in any unusual sense of fulness or discomfort in the scrotum, in any pain or drawing sensation in the cord, or in any feeling of distension and lack of complete relief from the orgasm.

16. In 13 of the cases here studied, both cut ends of the vas were tied; in 50 the lower end was left open; in two the record did not state.

17. The study does not throw any light on the reality of, or the explanation of the effects attributed to, the so-called Steinach rejuvenation operation.

18. Comparison with a group of 911 married women studied by Katharine Bement Davis indicated that the group of 65 vasectomized males was an average group sexually, as measured by frequency of coitus.

19. Comparison with a group of 257 men studied by Raymond

Pearl showed that the vasectomized males were marked by greater average sexual activity, and also by higher variability in this respect.

20. One-fourth of the variation in frequency of coitus was found to be due to age, the remaining three-fourths being accounted for by all other factors such as physical constitutions of husband and wife, mental attitudes of each, and opportunity.

21. The highest point of sexual activity (as measured by a theoretical curve) is found to be somewhat prior to 20 years of age; the vanishing point is 77 years. One-fourth of the maximum sexual activity of the male is lost by the age of about 30; one-half is gone at 45; three-fourths have disappeared soon after the sixtieth year.

22. With one exception, wives of all the vasectomized men were well pleased with the operation. The exception had no complaint to make about the operation so far as it affected her own marital relations, but thought that it gave her unfaithful husband greater freedom in breaking his marriage vow.

# A TENTATIVE CONTRIBUTION TO THE PSYCHOLOGY OF MENTAL CONFUSION

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IT MIGHT seem strange to a reader that, in order to deal with the very specific phenomenon of mental confusion, as seen in certain kinds of insanities, I feel compelled to begin the discussion by expressing a very general creed. Such is the case, however, and the premise referred to is as follows:

If we accept the view, that the criterion of mental normality and abnormality is entirely a social one, as has been pointed out by so many independent writers, we must also accept the fact that mental health means harmonious integration of personality under an altruistic master-motive or drive, this because only an altruistic ideal can lead to harmonious social adjustment. The growth that leads to normal health is thus the gradual growth of a dominating altruistic ideal. This view need not imply necessarily the introduction of an ethical aspect into psychology, it may be considered as purely medical. Just as the physician would say: "It is healthier to have a strong and vigorous physique than a weak body with inferior organs," the psychologist conforming with the creed may say, and for equally pure, hygienic reasons: "It is healthier to be altruistic than egotistic."

The growth of altruistic character in the child and the adolescent takes place "stepwise" and is induced by the suggestion from the side of parents and teachers of increasingly higher altruistic goals, to be followed. The route of this growth is a route rich in conflicts. This is primarily due to the fact that the crude striving tendencies which are innate to the child, are, with exception of the protective instinct, not in themselves definitely altruistic, but rather the opposite. In normal mental constitution they possess, however, the propensity of being able to become modified and sublimated into higher social or altruistic motives. Pugnacity, for instance, which primitively subserves primarily the destruction of any object, thwarting any other, oftentimes purely egotistic striving, may be sublimated as to subserve protection of others, not only of those nearest to oneself, but also of nationality, race, and, on the highest plane, of moral ideals, or civilization at large. In

the same way, sex, which is primitively a purely egotistic instinct, the goal of which is solely the completion of the sex act, may become sublimated as to subserve the higher goal of procreating a sound and healthy humanity. The heroic slogan of the Prussian mother of the time of the late Empire: "I want to bear soldiers for the Vaterland," is expressive of a less wide-reaching sublimation of this kind. Such sublimation involves necessarily the entrance of the primitive strivings into higher units,—sentiments.

Sublimation is possible, I have stated, in people of normal, sound mental constitution, or in people possessing constitutionally what I have in previous papers discussed as the A-tendency (the altrocentric trait). In deficient mental constitution, or in people possessing strong E-tendency (the egocentric trait), this modifiability of the egotistic instincts as to serve higher altruistic goals is not potentially there to the same degree. (For the further information concerning the A- and E-tendencies I refer to two previous papers: Constitutional Psychological Factors in Functional Psychoses, I: Manic-depressive Insanity, Journal of Nervous and Mental Disease, Vol. 64, No. 2, 1926, and Constitutional Psychological Factors in Functional Psychoses, II: Dementia Precox, Journal of Nervous and Mental Disease, Vol. 68, No. 5, 1928.)

Mental conflict is always conflict between disparately striving forces. Any mental activity, however, is both cognitive and conative, both intellectual and affective, and out of this arises the fact that we can single out certain conflicts which are, in a way, more predominantly intellectual, others which are more predominantly affective. The former would be the ones in which there is no conflict between fundamental motives or goals, but where the conflict is one between various impulses as to the route of obtaining one single goal. This conflict would be the one, where one striving is at work, but where there is indecision as to the best route of obtaining the end of the striving. It may be called predominantly intellectual because its solution is through an act of critical judgment, and selection based upon it. The other kind of conflict, the more predominantly affective, is the one, where two different motives are active at the same time and opposing each other. The healthy solution of this conflict can only occur this way, that a higher altruistic or social motive assimilates the two, makes them both serve its higher goal by modifying them so as to allow them both to be integrated in the striving towards the latter. It is obvious that the solution of this conflict is not entirely devoid

of intellectual involvment. Judgment plays a part also in it, but judgment is based on premises determined by the higher goal.

We can trace the conflict from the very earliest phases of the child's socialization. When each separate one of the egotistic instincts of the child becomes socialized, there is a conflict between two routes of expression of the instinct, the crude innate, and the social. But there is more than that, and this more is the essential. The suggestion of the social route, induced by the parent, is no reality to the child, the idea of it as an alternative has no meaning until it has been tied to some source of force, until it can generate energy, release a new impulse that is corrective relative to the crude drive. In the socialization of the child the parent has thus to create this tie. The social route, suggested as an outlet for the instinct has to be given affective power. And here the parent can utilize what there is of altruistic instinctive equipment; he can most profitably utilize the protective impulse on a stage when the latter has reached maturation; he can earlier than that utilize the submissive tendency, which is peculiar in this respect that it is not either definitely altruistic nor egotistic. Less profitable, although oftentimes seen, is the utilization of one of the more definitely egotistic instincts in the socialization of others, as when, appealing to the food-seeking instinct, you give the child a lollypop when he does what is socially required, or when, appealing to the acquisitive instinct, you give him a new plaything any time he has been good. By this method you are liable to lose in one direction what you gain in another. Less profitable is also the extensive utilization of fear in the socialization of the child, as when you inflict bodily pain on him any time he errs. The general risk is here, as before, that social character will be only superficially founded, in that social conduct becomes motivated by egotistical interests rather than by a true altruistic sentiment. When the child has become to some extent a social being and has acquired the rudiment of a self-regarding sentiment, the combined appeal to his protective impulse and his self-respect will be a forceful motor in further healthy character-building. By thus furnishing the higher goals with affective force, by tieing them to sources of energy, varying somewhat on various stages of development, but always profitably related to the altruistic innate tendency, the parent or teacher establishes a condition in which socialization of each cruder tendency is more than an intellectual solution of a conflict between routes; it is also a conflict between motives, between the forces attached to the higher and the lower goal.

Socialization on the higher plane proceeds in essentially the same way. A higher altruistic motive, suggested by others, conflicts with a lower, more egotistic drive, and finally assimilates and sublimates it. There will come a period when the child, to a larger extent, has to determine himself his course of activity, when this is no longer to the same degree laid out to him by sympathetic guidance. From this period on, the intellectual conflicts will be added more definitely to the affective. With the increase in the number and complexity of motives, that occur when the instincts become developed into sentiments, the liability for affective conflict between motives on the same plane of development also increases and the need for gradually higher motives, integrating these becomes increasingly necessary. Those higher motives continue to be suggested by teachers, older admired friends, and worshipped heroes, met in history, art and fiction. Thus character growth. Only in fully and ideally developed character there are no affective conflicts, but still there remains the possibility of intellectual conflict. In spite of the predominance over the sound personality of one altruistic master-motive that will assimilate smoothly any subordinate strivings, and kill in the bud, without strong effort, any tendency for affective conflict on a lower plane, there may be indecision as to the route of reaching the goal of the master-motive. It is the more or less explicit recognition of this fact that has brought psychologists to distinguish so strongly between intellect and character.

What I have described now is essentially the growth of normal healthy personality, the growth of its structure. The healthy normal personality is, thus, the one whose conduct in all life situations is determined ultimately by one predominant altruistic motive, strong enough to subliminate for its purposes any lower striving; strong enough, in other words, to integrate into a hierarchy all these strivings. But personality structure has also another phase. All mental activity, I state again, is intellectual and affective at the time. Just as our strivings become integrated in normal personality growth, our intellect becomes integrated into the system of our beliefs, the beliefs which form the premises in all critical judgment. Perfection of intellectual integration need not keep pace with perfection of affective, as has already been pointed out. The perfect intellect would be the one that could immediately solve any conflict as to route, just as the perfect character would be the one that could immediately solve any conflict as to motive.

The introduction to the discussion of mental confusion neces-

sarily has to take up one more feature of general psychology, namely, the influence of striving on cognition. Striving seems to exert a selective activity on thinking both in the field of perception, imagination and association. Of all those impressions we continually receive from the outside world, by means of our sense-organs, only a small number attain full meaning, become objects of conscious thought, namely those which are related to a motive at work. On the other hand, we are peculiarly sensitized to perceive these impressions, to single them out of the vast multitude of impressions. In the field of imagination the same principle expresses itself in a peculiar liability to produce spontaneously ideas which are related to the motive, and in the field of association it expresses itself in similar liability of the trend of our thought to bear in some way on the motive. In animals the working of this principle can be observed in the perceptual field. Whenever an instinct is active in an animal, the animal seems to be extremely insensitive for non-related impressions. In the striving of man, particularly on the higher plane of striving, and the highest, this selective activity of the motive on thought becomes true implicit judgment, becomes a critical activity, involving undoubtedly the utilization by the motive of the most intricate integration of our acquired cognitive structure, the whole process being unconscious to the individual. This principle is of paramount importance. It is obvious that, in the human adult, innumerable objects of thought have, by experience, become associated with strivings, and attained the propensity of setting up impulses any time they are activated. Consequently, without the selective activity of the motive at work, there would be impulses conflicting with this motive arising all the time, due particularly to the multitude of impressions from the outside which is present continually. As to the theory of this selection, the matter is probably as follows: What is primarily selected is not a cognitive material but an impulse. That is, whenever an impression or a spontaneously produced idea is on the verge to set up an impulse that is not in harmony with the motive, this impulse is inhibited in the bud. The result of this is that the impression or the growing idea never attains full meaning, as the full meaning of an object of thought always is determined by a striving to which it is related. On the contrary, if the impression or the growing idea sets up an impulse which is in harmony with the motive, this impulse is immediately assimilated with it, it is allowed to coöperate in the general trend of striving; thus the impression or the idea also attains full meaning,

becomes an object of conscious thought. This theory of the phenomenon of selection is based on experiments I have carried out on functional anaesthesias as produced by hypnosis, which experiments seem to indicate that the functional insensitivities are really due to inhibition of strivings relative to certain objects, an inhibition that makes impressions from these objects pass entirely unnoticed. ("An Experimental Study of Functional Anaesthesia as induced by Suggestion in Hypnosis," The Journal of Abnormal and Social Psychology, Vol. XXIII, No. 3, 1928.)

The principle of selection we have described holds for any motive during the period of its dominance of activity. In well integrated healthy character where numerous subordinate strivings are organized under the supervision of an altruistic master-motive, this master-motive, by controlling and harmonizing the goals of all these strivings, also controls and harmonizes ultimately the selection of thought, exerted by each of these. In less well integrated character, where the hierarchy of strivings is less profoundly established, subordinate motives are liable to conflict. This will be paralleled with disharmony in the selection of thought by each of these motives, a state of affairs that is liable to express itself in distractible and flighty conduct. If active conflict is going on on the subconscious plane in an individual, as is assumably the case in many neurasthenics, I can theoretically see a possibility that distractibility and flightiness in conduct may occur as a compulsory symptom of the condition.

There is reason to think that the strongest motive, even when it is not directly active, when it is latent interest only, exerts some degree of similar selection on thinking. Again the altruistic master-motive of healthy, well integrated character, even when latent, has the ultimate control of the selection by subordinate latent interests. Again distractibility and flightiness may be expressive of the existence in an individual of various poorly harmonized latent interests, potential of bringing about active conflict.

I do not think that there is the least doubt that similar distractibility and flightiness is liable to occur not only when there is conflict between motives, but also when the conflict is of the more intellectual type; namely, when it is a conflict as to the route of one and the same striving. Introspection upon such situations will, I think, make us recognize fairly clearly that we are forced, just as during conflict between motives, to fluctuate our attention between various contradictory thoughts, and imperative impulses in direction of the various alternatives of route are continually

pulling us now here, now there. From this follows that distractibility and flightiness may occur even in the individual of ideal character, in whom it is then determined solely by a conflict as to the route of the paramount, altruistic motive.

First now we have reached a point in the discussion where we can attack directly the problem of mental confusion. The thesis I then want to defend concerning confusion has two phases:

1. The condition of confusion in general is essentially a condition when directed response is blocked by the fact that many disparate impulses, pulling in incompatible directions, are reciprocally inhibiting each other.

2. The condition of confusion, as seen specifically in certain types of insanities, is secondary to and determined by a condition of general dissociation of the higher brain-systems, particularly the cortical, by some kind of toxin. This condition is naturally not essential in the temporary confusion that the normal man may suffer.

If my first statement is true it is obvious that the condition of confusion is closely related to the condition of continued conflict. In fact, I think that the essential difference is only this, that, whenever we suffer continued conflict there is an oscillation between impulses, not a deadlock; introspective experience seems to me to bear out this sufficiently. The more rapid this oscillation is the more the condition approaches confusion; on the other hand, the beginning of oscillation between the varying impulses involved in the confusion signifies a cessation of the confusion. What is said now holds whether the conflict is between motives or between routes.

In support of my general interpretation of confusion I will now proceed by trying to paint the picture of confusion, both as occurring in the normal individual and in the insane.

The confusion of the normal individual can best be illustrated by an example. Suppose a normal person finds himself in the middle of a well-trafficked city street. Suddenly he sees a number of motor-cars approaching from every side and apparently aiming at him. This situation may bring about a complete blocking of escape conduct because the subject is incapable of deciding the route of activity. I think popular language would speak of this individual being temporarily confused, and psychologically his condition is expressive of conflict of the intellectual type. This confusion may be only momentary; it may become rapidly dis-

solved into flighty activity. The subject may rush now in one direction, now in the other—a familiar sight—until, by trial and error, his conduct leads to salvation or to catastrophe; it may also be solved into critical, one-directed movement along one, really purposeful route and will, then, be more liable to result in salvation. Either way conduct takes place, the act of responding overtly to the situation represents a solution and a disappearance of the confusion. This example illustrates confusion determined by a conflict as to routes. In the normal, confusion may naturally also be secondary to conflict as to motives. McDougall has interestingly interpreted the condition called embarrassment, as a deadlock between the tendency of assertion and submission. If his interpretation is proper, as I am inclined to think, the embarrassment would be a good example, in the normal, of confusion determined by conflict between motives.

Now to the confusion seen in insanity. Here it should be pointed out that it occurs not infrequently that physicians disagree as to the confusion of a patient. Such cases we shall have an opportunity to return to later. There are, however, frequent enough instances of cases where no two physicians would hesitate a minute in calling a patient confused. The physicians have certain crude clinical tests concerning confusion, dealing particularly with the problem of subjective orientation of the patient as to person, time, and place. If a patient is disoriented in these concerns and in addition presents some other symptoms, the physician feels certain that he is confused. These other symptoms are, as regards the interpretation of confusion, of extreme importance. They are primarily the following: Distractibility; a certain indefinite swaying of conduct which if it becomes more definite has the exact character of flightiness, either it is expressed in coarse bodily movements or only in vocal manifestations; in the latter case it is the typical "flight of ideas"; furthermore there is in the state of confusion a liability for so-called resistiveness, and, although in considerably less frequent instances, of echolalia and echopraxia. If we have, previously, properly related distractibility and flightiness to a conflict of either the affective or the intellectual type, we may now have a right to consider these symptoms in the confused patient as again determined by conflict between disparate impulses, and as these symptoms are peculiarly characteristic of the patients we speak of as confused, we may find in the material of psychiatry a further evidence for our theory that confusion in general is a condition of blocking of response due to simultaneous activity of

disparate impulses and reciprocal inhibition between these. We have to keep in mind that in our confused insane, any conduct, however flighty, again represents, just as in the normal suffering confusion, a temporary solution of the confusion, although the less discriminative attitude of the clinician does not emphasize this point.

It is of interest in this connection to dwell a moment on the psychology of functional trembling. McDougall brings to our attention that functional trembling occurs, not as peculiarly connected with fear alone, but at any time when instinctive conduct is blocked by any means whatsoever. If this blocking is due to reciprocal inhibition of disparate impulses as in our confused patients, we would consequently expect also here a liability for functional trembling. In fact, we can in our confused patients notice a scale of conducts on the one end of which we may lay functional trembling, on the other flighty behavior. Between the extremes on the scale would fall this vague indefinite sway of bodily activity we have already referred to, and also the apparently contentless restlessness that we see in certain confused patients.

The distractibility of the confused patient becomes probably accentuated by a principle beyond the one discussed above. However vague the awareness pattern of the confused patient may be, there is, I think, little doubt that he is conscious of a feeling of unreality regarding his experience in toto. Such feeling of unreality is liable to occur in any individual if, for any cause whatsoever, there has been brought about a modification of his normal mode of striving. The continued condition of confusion in the insane is a very definite modification of his normal mode of striving, and although his level of consciousness is clouded and indistinct he probably suffers the feeling of unreality. Patients gradually working out of confusion we repeatedly hear state that things do not seem natural to them, or that things seem changed, seem unreal. On the background of this general feeling of unreality, naturally any impressions from the outside are liable to appear strange to the patient, and thus are liable to evoke the curiosity instinct. In addition to the distraction by conflicting impulses there comes thus the distraction due to the peculiar liability for the curiosity instinct to be activated by the multitude of impressions received through the sense-organs. The feeling of unreality of the confused insane is naturally determined by the fact that reciprocal inhibition of impulses prevent the normal mode of striving relative to impressions, which in its turn prevents these

from obtaining the normal meaning. As such, deprived of the meaning that makes them appear real and right, they evoke the curiosity instinct.

Curiosity is peculiarly liable to blend with fear. Any observer of curiosity in animals will be struck by the fact that the animal in front of the strange object seems to sway between the two impulses, to approach so as to obtain fuller perception of the object on the one hand, and to run away from it in fear on the other. The predominance of one or the other of these impulses is probably determined to some extent by the degree of strangeness of the object, but above all by any indication of aggressive behavior of it, when the impulse of flight immediately conquers the impulse of curiosity. This principle explains, I believe, the symptom of resistiveness in our confused patients. The term resistiveness has come to apply to a very specific kind of conduct in the confused. Whenever you try to manipulate any limb of a patient in deep confusion, he will withdraw his limb or resist your manipulation as if afraid. There is little doubt that this resistiveness is a true fear-reaction and in psychological motivation entirely different from the negativism oftentimes shown by the schizophrene patient. We have again the general background of feeling of unreality that gives every impression from the outside a character of strangeness. The actual manipulation by the physician of the patient has, in addition, the propensity of being to some degree aggressive and naturally it will evoke in the patient the fear-impulse rather than curiosity. Resistiveness occurs in patients in extremely deep confusion, where the general level of consciousness is lowered by extreme exhaustion.

There is another consideration that should not be passed by in this discussion of the symptoms of confusion of the insane. We may assume that the condition of prolonged confusion, involving continual conflict between disparate impulses, is extremely exhausting. Evidence for this is the fact that deep confusion oftentimes gradually passes into complete coma (depressive stupor) and this transition I would parallel with a gradual exhaustion of the force of the disparate impulses, leading to complete cessation of activity of these, and of mental activity as a whole. We may furthermore assume that the condition of confusion is subjectively painful or at least vaguely uncomfortable, and that relief of the confusion is subjectively pleasurable. We have previously pointed out that flight is a solution of confusion and we may thus conclude that flight offers a pleasurable relief to the patient who has suf-

fered confusion. The apparent indefatiguability of many flighty patients, particularly the manics, can get some light thrown upon it by the consideration that even if the manic patient's flight seems to involve an extravagant expenditure of activity, it is, however, a relief of a condition that in itself is more extremely exhausting. Just as flight, the reaction in sequence to the disparate impulses, offers relief, any single persevering reaction to any one impulse offers a similar temporary relief of the confusion. This principle is probably involved also in the manifestation of distractibility. The act of distraction, being a definitely directed response, relieves for a moment the confusion and is accompanied by the pleasure or comfort of relief. Even the resistiveness, although a fear response, may contain the element of comfortable relief, being a directed response and thus a temporary solution of the confusion. This consideration may perhaps offer a lead to the explanation of the two remaining clinical symptoms of confusion, which have not yet been dealt with, namely, echolalia and echopraxia, but I admit that the interpretation of these that I can submit may not be fully satisfactory. What takes place in echolalia and echopraxia, seems to be first a distraction of the patient's attention to the movement or the vocal expression produced by the physician. This distraction is followed by the conveyance of the idea of the movement of the limb or vocal organ to the patient. Why this idea leads to an imitation of the movement is more difficult to say. Physicians speak of the two symptoms together as suggestibility. If this term is proper, it would imply that there is an evocation of the submissive tendency in the patient by the physician. It may be possible that, due to the general feeling of unreality the patient experiences, the physician in the patient's mind comes to possess the properties of the domineering object that is liable to set up the submissive attitude. If the ideomotor theory could be upheld as a general psychological principle the explanation of the "suggestibility" in question would be easy. Whatever this mechanism of echolalia and echopraxia may be, this much is probably true that the tendency to imitate, after the act of imitation has taken place a few times, will grow peculiarly strong due to the relief the patient finds in executing it, this again depending upon the fact that the directed act, independent of its goal or purpose, signifies a temporary solution of the confusion.

To summarize the part of my discussion that has now been brought to an end, and that bears on the first point of my thesis, we may say that the descriptive consideration both of the con-

fusion, suffered temporarily by the normal, and the prolonged confusion, suffered by certain insane individuals, seems to bring out the truth of my theory of the nature of confusion; namely, that confusion is a condition of blocking of directed response, both cognitive and conative, due to the simultaneous activity of various disparate impulses which reciprocally inhibit each other.

The second point of my thesis, stated again, is as follows: The condition of prolonged confusion, as seen in certain types of insanities, is secondary to and determined by a condition of general dissociation of the higher, cortical brain-systems, brought about probably by a toxin. There are two separate lines of evidence in support of this view.

1. The fact that we find the condition of prolonged confusion in insanities where we are fairly justified in thinking that the psychosis is secondary to a toxic condition. We find it in all kinds of drug psychoses; we also find it, in women, in puerperal psychoses; and finally we find it in manic-depressive insanity, the fatigue-psychosis par excellence. This line of evidence gets weight, in view of the fairly well established fact, that certain drugs (alcohol and its group), and also the fatigue products of metabolism bring about exactly the crucial dissociation of the brain-systems.

2. The fact that, if we try to analyze theoretically the effect on conduct of the crucial dissociation, we will come to the conclusion that it ought to be highly liable to bring about the condition we have described as prolonged confusion, as seen in our insane patients.

To further illuminate these two groups of evidence, let us consider the presumable effect of alcohol and allied drugs, and of the fatigue poisons, on the brain. McDougall has given much time to the discussion of this matter both in his "Outline of Abnormal Psychology" and in a number of separate articles, and I give in the following a very condensed abstract of his view, on which I rely confidently. The influence of alcohol and fatigue poisons on the central nervous system is essentially one of dissociating neurones and neurone systems. This dissociation is presumably due to an increase, caused by the drug or fatigue toxin, of the resistance between the synapses connecting the various neurones and neurone systems. The effect is particularly strong on the acquired connections, those developed during life experience, and the more recently they are acquired, the more they will be submitted to the

dissociating influence. Certain connections which are innate, particularly those which underlie the integration of the systems corresponding to our innate purposive drives, seem to be very little effected by the dissociation. The same is true of the innate direct connections between the afferent and efferent side of the reflex arc. It is thus primarily the higher, cortical connections representing the acquired integration of neurones and neurone systems that will suffer from the effect of dissociation.

If we now take the least one-sided view on psychological problems, namely, that any mental activity is psychical and physical at a time, and that any acquisition of mental structure is, at the same time, acquisition of nervous structure, that the two are closely interrelated, and one dependent upon the other both in growth and function, we may proceed by considering what exactly the higher brain-systems, suffering dissociation by the drug and the fatigue poison, represent on the psychical plane. This consideration necessarily leads us to assume that the higher nervous integration on the cortical level represents, psychologically, both the affective integration of our strivings into character, and the intellectual integration of our cognition into the system of our beliefs.

Personality structure has one more phase, the structure underlying true memory. This can perhaps not be related to brain-structure and offers at present a very obscure problem, which, however, needs not be entered into in this discussion.

With these considerations in view, we may now speculate upon the probable modification of conduct that the dissociation of the higher brain-systems, corresponding to the integrated personality, may bring about.

The dissociation of these systems obviously means, psychologically, two things, on the one hand a disintegration of character, a loosening of the grip of the master-motive on subordinate strivings, on the other hand a disintegration of our intellect, a dissolution of our system of beliefs, and thus an impairment of critical judgment caused by decay of sound and omniconsiderate premises. The first disintegration will equally obviously predispose the suffering of conflict between motives, affective conflict, the latter the suffering of conflict between routes, intellectual conflict. And here finally we have, thus, the very condition that would in general predispose to confusion, as defined above.

It seems, thus, that descriptive and logical contemplation of matters bears out the view that confusion, as seen in certain in-

sane, reasonably may be due to a general dissociation of the higher brain-systems, and we also have valid evidence to support the opinion that this general dissociation reasonably may be brought about by a toxin of some kind, in the exhaustion psychoses presumably by fatigue products of metabolism, in alcoholic psychoses by the alcohol, in other drug-psychoses by some other drug, in puerperal psychoses by fatigue toxins or eventually some other intraphysical product of the act of childbearing.

It remains to discuss a few psychiatrically very important phenomena which occur, presumably when the general dissociation of the higher brain-systems is lifting, and the clinical symptoms of confusion become far less apparent. This is exactly the condition when it is difficult for the physician to ascertain that the patient is confused. The latter can now satisfactorily pass the clinical tests of orientation, he also shows neither definite distractibility nor flightiness, nor does he manifest the fear-reaction of resistiveness, and still less does he manifest echopraxia or echolalia. What he shows is, however, certain defects of critical judgment that makes some physicians, I think incorrectly, claim that he is still confused, defects of judgment that even allow him to develop delusions of the wishfulfilling kind, which very much remind of the delusions of the schizophrenic patient. But the important difference between the two is that the former delusions, developed during the after-swell of confusion, are not by far of the same grave prognostic significance as the delusions of the schizophrene. No symptoms as a whole that can be proved to have developed during a period subsequent to definite confusion are of the same grave significance for the final outcome of the disorder, as the symptoms developing gradually in the completely clear mind.

I am inclined to relate the delusions that we see develop in patients who have been confused less to the confusion per se, than to the condition of general dissociation of the higher brain-systems which to some degree is still there although it has lifted to an extent that it does not produce confusion, as we have strictly defined the latter above. Those delusions very often consist solely in undue retrospective falsifications and undue rationalizations, which prevent the attainment of true insight of the patient as to the condition he has been in. Oftentimes amnesia for confused periods enter as a factor in the prevention of retrospective insight. This type of delusion is particularly common in patients being constitutionally egotistic, patients with strong E-tendency, and they are peculiarly liable to occur if the patient, during some

phase of disorder has conducted himself repulsively or in a way that his self-respect cannot suffer to accept when he, during recovery, looks back on his psychotic experience. True sense of humor which is characteristic only of the individual with constitutionally strong A-tendency will always help the patient to accept his conduct during the past without falsification, and such a patient will more rapidly attain full insight after his psychosis. In other instances, particularly if an exhaustion-psychosis has been partly brought about by worry over a self-caused failure or a disappointment connected with self-guilt, the delusions developed during recovery may bear specifically on the precipitating experience and the patient may falsify it, developing typical wish-fulfillment delusions, that may continue for a long period of apparent recovery otherwise.

To explain the psychology of the phenomena sketched above I have to parallel them with what I think are, in a way, similar phenomena, occurring in certain types of hysteria. We know that when the brain is in a vague degree generally dissociated, in sleep, in condition of drunkenness, and so on, certain wishes which have been under repression, and inhibited from conscious awareness, may take possession of the total personality and carry him into various forms of somnambulism. (I use here the term somnambulism in the same wide sense as Janet does.) During these states of mind, you may say that the normal self-regarding sentiment that determines the subject's activity in normal waking life is temporarily weakened due to the general dissociation of the brain. There is consequently, in other words, a degree of disintegration of personality. During such condition it is possible for a strong repressed motive to take the place of the normal self-regarding sentiment and temporarily carry the subject into noninhibited activity in accordance with its goal. Similar principle underlies probably the phenomenon of hypnosis. The first step in hypnotizing an individual is to bring about some degree of general dissociation of the higher brain-systems, by applying various monotonous and vaguely fatiguing stimulations. Only the success of this procedure allows the establishment of the rapport-sentiment. The establishment of rapport signifies a substitution of the normal sentiment of self-regard by the rapport-sentiment which is an artificially constructed motive, the aim of which is all-powerful submission to the hypnotizer. Again this substitution is allowed for only in the condition of general dissociation of the higher brain-

systems parallel on the mental plane with some degree of disintegration of personality.

I think that an analogous psychological principle explains the delusion-formation of the patients we are discussing. When those patients are recovering from a condition of general dissociation of the higher brain-systems, when there is still some degree of disintegration of personality, when still the various strivings are not integrated under the dominance of the social or altruistic master-motive, subordinate egotistic wishes have an opportunity to take the dominance of the individual and will then determine delusions in direction as to fulfillment of their goal. The delusion-formation is facilitated by the fact that the intellect is also in a state of disintegration. Fantasies which bear on the wish will thus be uncritically accepted and utilized in the wish fulfillment, which under normal integration of the intellect would have been rejected. The patient, during this phase of recovery, is thus not confused, strictly speaking, but the development of the delusions is allowed for by the same condition of general dissociation of the higher brain-systems, that on a more profound level determined the confusion. Both the confusion and the delusion-formation are thus related to the disintegration of personality, which is secondary to the dissociation of the brain by a toxin, but the confusion is related to the more profound level of this condition, the delusion-formation to the period of lifting of or recovery from the dissociation.

I think this interpretation of the delusions under discussion finds further support in the fact that in many normal individuals fairly similar delusion-formation can be noticed in a temporary condition of light intoxication by alcohol. There occurs, for instance, oftentimes in such condition, an optimism that is definitely delusional. Wishes and ambitions that, in a sober state, seem difficult to satisfy, because, in contemplation of them, the critical judgment brings to consciousness not only the pros, but also the cons in the state of intoxication appear easy to reach. In the state of light intoxication there obtains some degree of general dissociation of the higher brain-systems, with consequent affective and intellectual disintegration. On this background the wish may acquire undue dominance of personality, and it will then unduly and uncritically produce thinking in support of easy attainment of its goal, and at the same time exclude from consciousness the all-considerate arguments in opposite direction.

Finally, it is of interest to compare the delusion-formation of

the above recovering patients with the delusion-formation of the paranoid schizophrene. For some years I have held the view that the development of schizophrenia, particularly the paranoid type, has in the main the following course (compare my paper on Dementia Precox). Slowly and gradually there takes place, in a fully clear mind, a surpassing in growth of the social master-motive of sound character by an all-important egotistic wish. As the wish attains dominance it prejudices judgment and causes the subject to distance the normal healthy condition also intellectually. This prejudice is in the direction of egotistic wishfulfillment, and whenever it conflicts with the true reality-criterion, as conceived of by the patient pre-psychotically, there is a repression of the tendency to consider the prejudice in the light of previous experience. The more successful this repression becomes the more freely the delusions can be formed and extended. Finally, there occurs a complete decay in the patient's intellect of the normal reality-criterion, and compensatory fantasy becomes, subjectively, reality, in which he can without any hindrance gratify his egotism. It is probably even true that in many cases of schizophrenia, due to a constitutional defect, which in my view is extremely strong E-tendency, the apparent social adjustment the patients shows pre-psychotically, is only superficial, and not determined by a true altruistic motive. It is more a mask that the subject forces upon himself in order to avoid the crudest frictions with his fellow-beings. Already at an early age of adolescence a point is reached when the maintenance of this mask becomes impossible, because of the dominance of the egotistic wish, and when the subject begins to assert himself egotistically. He is then liable to be involved in frictions with his environment and will suffer repeated failure in his attempt of assertion. As a compensation for these failures he begins to develop the delusions, which gradually lead to the complete decline of the reality-criterion. In developments such as the one pictured above, there is thus hardly even a substitution or surpassing in growth of an altruistic motive by an egotistic wish. Character development has gone astray from the beginning, or rather sound character-formation has not been capable of development, because the primitive drives have not been constitutionally modifiable, due to the constitutional absence of the A-tendency, and undue strength of the opposite E-tendency.

The all-important difference between the delusion-formation of the schizophrene and the delusion-formation with which we have wanted to compare it, and also between the delusion-formation of

the schizophrene and the phenomena of somnambulism and hypnosis, is that in the schizophrene we have, when there is not a total non-development of a sound altruistic master-motive, a gradual substitution of such by an unsound egotistic wish, this substitution being independent of general dissociation of the higher brain-systems, independent of apparent disintegration of personality, independent of apparent confusion of any kind, while in all the other forms of disorder, the decline of the master-motive is secondary to a temporary general dissociation of the higher brain-systems. This difference is psychiatrically important, because our experience of the insane shows us that what has slowly and gradually developed in the schizophrene is a non-recoverable condition of social disease, while the disorder which is secondary to the general toxic dissociation of the higher brain-systems, is only acute and will disappear when the effect of the toxin has completely worn off. This emphasizes intensively the prognostic significance of the general toxic dissociation of the higher brain-systems in cases of insanity, and thus, secondarily, the prognostic significance of confusion in insane patients, confusion being the most outstanding clinical symptom of such dissociation.

# SECOND REPORT ON LADY, THE "MIND-READING" HORSE

By J. B. RHINE and LOUISA E. RHINE

IN THE January number of this JOURNAL we reported on a study of Lady, a "mind-reading" horse. This study was made at Richmond, Va. during the academic year of 1927–28. The (then three-year-old) filly had been claimed by the owner, Mrs. C. D. Fonda, to be of such superior intelligence as to be able to reply to questions by touching lettered blocks, and to execute mentally simple arithmetical problems. Of this superior intelligence we obtained no evidence; on the other hand we were able to show that Lady did not even recognize the letters of the alphabet.

The horse was advertised by Mrs. Fonda as being capable also of "mind-reading", that is, able to receive mental influence from others without the use of its ordinary senses. She claimed that it was able to answer unexpressed questions by touching lettered or numbered blocks with its nose, the letters or numbers being mentally chosen by Mrs. Fonda or other persons present. It was to the investigation of this claim of telepathy that our principal efforts were directed.

There was some movement on the part of Mrs. Fonda, inclination of the body, and movements of arm and whip; she also spoke frequently to the horse. While we did not discover any significance to these movements and while they appeared quite natural, they were at once suspected, and systematically eliminated. That is, Mrs. Fonda was gradually restricted to the point where all recognized possibilities of guiding the horse to the correct block by voice or visual cue were removed, not only individually but finally all together. Nevertheless the horse was successful. Good results were obtained with F (Mrs. Fonda) silent, motionless, and with eyes controlled, and with F separated from the horse, or with a screen between her and the animal. More than this, Lady was successful with F entirely ignorant of the block chosen, and with Dr. William McDougall and R as agents, or R alone, controlled and guarded against the giving of unconscious signals. It did not seem possible that any system of indications, conscious or unconscious, could operate under these conditions, and we felt ourselves com-

pelled to recognize another means of transference of mental influence other than the known senses—in brief, telepathy.

The colt was at that time quite active and playful, and was not easily managed even by F herself. It kept biting the blocks, nibbling at F's coat-sleeve, pawing the ground, and was generally restless. F had considerable difficulty in overcoming this and getting it to work. She felt that she had to use the whip in order to do this, a policy with which we did not agree. But once the animal came under her control it became very passive, and its movements were leaden. It was with this passive state that our best results were associated. Those of Brugmans, referred to in our earlier report, were also associated with a similar passivity in his subject.

On December 3–8, 1928, inclusive, we were able to make a further study of Lady at the same place and under the same general conditions as before. The colt had matured greatly in the interval since our earlier study, and was quite well-behaved and very much more obedient and tractable than it had been before.

The weather was unusually good, and the demonstration tent described in the first report was heated. We had thought that the low temperatures under which our earlier investigations were carried on had interfered somewhat with the animal's passivity, and so reduced to some extent the number of successes. In this new study, however, all these external disadvantages were removed.

### OBSERVATIONS SUMMARIZED

In spite of better conditions than formerly, better results were not forthcoming. Lady seemed to be unable to work successfully when restrictions were placed upon F. It was noticeable at once that F was doing more talking to the horse than before, making movements that seemed to coördinate with the direction she desired Lady to take, and was using the whip in a way that was obviously significant. All of these movements and sounds were quite apparent, and required no cleverness to detect. For example, when the block chosen was one at a distance from F, she leaned and even stepped forward. She kept leaning farther forward until the horse's head came over the block chosen, then she stopped and moved back a little and the horse touched the block. The whip and voice seemed also to coördinate very significantly with the body movements.

All this was quite different from the procedure we had witnessed during the year previous. Only on our last visit to Lady

(in April) had we noticed anything of the kind. Then we saw that F was using the whip, and speaking, when we did not restrict her, much more than she had previously done, thereby rendering the demonstration valueless. But on that occasion we had excused F on the ground of nervousness due mainly to recent illness. Also at that time she had introduced a halter strap which she was again using when we began the December, 1928, series, but of course it had to be eliminated. Promptly becoming suspicious of the many movements, we proceeded to repeat the same tests we had given before under duplicated conditions.

It soon became evident, however, that under the conditions used in obtaining the earlier successes, Lady was no longer susceptible to influence from R as agent. His attempts to direct the animal mentally were failures not only when he stood in front of it with eyes shaded from it and from F, but even when he stood at its head with eyes unshaded. When he stood behind F and wrote the number on a pad as he had once done with excellent results, there was now complete failure.

Formerly L E R (Louisa E. Rhine) had not acted as sole agent on more than a few occasions, the results seeming to show that she did not do so well as F and R. Now, however, she tried frequently, following the failures of R, and obtained somewhat better results than he. But her results in no series were good enough to be convincing. Out of 110 tests, with F ignorant of the choice, L E R obtained 19 successes (best series 3 out of 10), while R got only 7 out of 70.

With F acting as agent Lady's success in the original study had been almost unbroken. We had secured good results not only with F motionless and silent and with eyes controlled voluntarily, but also with an 18 inch square screen interposed between herself and the horse; and with F blindfolded, motionless and silent. Repeating these tests now under approximately the same conditions, we obtained astonishingly poor results. In fact it appeared that Lady had very little better success with F knowing the block but restricted by screen or blindfold than with F ignorant and R and L E R acting as agent.

When F was blindfolded, Lady got only one out of ten tests correctly. With the blindfold raised so that F could see the blocks, however, results were perfect. With blinders on the horse (these had not been available for earlier tests) results were fairly good (three out of five) if F was allowed to speak and use the whip which she did freely. But when voice and whip were eliminated

failure resulted. Yet with the blinder on the left eye turned back or raised up so that some vision of F's movements were allowed, good touches were made with F practically silent and without the whip. She leaned conspicuously, however, and even stepped forward and backward, as the block lay in the farther or nearer row.

Results were almost equally bad when the 18 inch square screen was interposed between F and the horse. At most, 2 successes out of 10 were obtained even though F spoke continuously and used the whip. Her efforts to see around the board were very obvious, though not successful, and her nervousness marked.

It was impossible to get F to carry out our restrictions for the most part. She did not remain motionless in spite of our repeated requests, although she would acquiesce and appear to try. When asked to fix her gaze upon a certain point she would hold the pose only momentarily. Then finding the animal loitering or touching wrong blocks as it invariably would do, she would break control and scold or whip the horse. As noted in the earlier report this had occurred occasionally at that time, but not to the exclusion of all success as it did in this later study. At that time, however, the horse usually succeeded promptly and F's provocation to break control was less. But now the horse seemed entirely dependent on the various and obvious cues which F, unrestricted, gave it, and it did not succeed without them.

But not only were F's indicative movements apparent. They were easily duplicated. R himself, standing at the horse's head was able to direct it by voice inflection and body movements so that it touched the desired blocks or cards with very few failures. He obtained 20 successes consecutively in one series. He could do this even with F outside the tent, though in the year previously he had been unable to direct Lady or even to control her in F's absence. When he followed this series by one in which he remained silent and motionless as he had done successfully the year before, however, he had entire failure.

When he stood in front of the horse and across the table from it instead of at its head and attempted to guide it by indicative body movements, however, he failed. Even when he exaggerated these by tilting his head far off to one side or leaning his body until he was decidedly off balance (F blindfolded and so unable to get the signal and give to the horse herself) Lady still failed to get the cue. And when F herself was required to stand in front to direct the horse, she was not successful, although she was unrestricted. More than this, with F in that position and R at

Lady's head, both unrestricted except from actually walking around, R was able to over-ride whatever influence F may have had on the horse and by his indicative body movements, guide the horse at will. It was clear, therefore, that the animal was accustomed to taking its cues from the individual who stood at its head (F's accustomed place) rather than from the one who stood in front and across the table from it.

Not only was the horse's dependence upon sensory cues very evident in the later tests, but the passivity which had been a conspicuous feature of its best working state before was now completely gone. It never got into the state of extreme relaxation and apparent stupor we had noted previously and which we had associated with the telepathic process, although, being older now, it was in general more docile and less restless and active than formerly. At all times now it maintained a certain alertness, one ear usually directed toward F at its side, instead of relaxed and drooping.

In view of these facts, the result of over 500 tests made during the week, we were forced to conclude that the telepathic ability we earlier found the horse to possess has been now almost if not entirely lost and that Lady has become merely a trained animal conditioned to a system of signals made up of indicative body movements, voice inflections, whip movements. These signals are usually given by F but may be duplicated easily by others, if the person giving them stands in F's accustomed place at Lady's head.

These signals supposedly originated with F in unconscious body movements and voice inflections and were gradually substituted in the horse for the telepathic sensitivity which probably disappeared slowly. Whether or not this sensitivity could have been preserved by different management of the horse, or whether it was an ephemeral quality due to pass in any case, is an unanswered question. According to Brugmans' and other reports on telepathy in human beings it is an ability which in some cases has been weakened and finally lost; so that Lady's case is not entirely unique.

Unfortunate to science as this change in Lady is, at least the negative results of our final week of experimentation may be taken as a check upon our earlier conclusion that the horse was then telepathic. If Lady had been guided at that time by sensory cues she should have improved in training in the interval. But the later data show that she could no longer succeed under any of the restrictions imposed upon her earlier. This shows unmistakably

that a profound change in the horse's capacities has occurred. That the change was not merely in the investigators' greater skill in avoiding the giving of signals, is shown by the fact that Lady no longer could be directed by R standing in front of her even when he tried to direct her by signals from that position. In the earlier work she did respond to his thought when he stood in that position and endeavored in every way to guard against giving a sensory indication. It is hardly conceivable that R could have given unconscious indications in the earlier case when he was trying not to do so, that could more easily be followed by Lady than the cues he later gave intentionally after the horse had had much longer training and experience.

The change in the horse's passivity mentioned above is significant in this connection too. Whatever the relation of this sleepy state to telepathy it was not the animal's normal state of alertness and attention, yet it was while in this state that it succeeded best. Later when normally alert and attentive it failed. And so our earlier conclusion that Lady was then telepathic seems to be supported in a substantial measure by the later negative findings, in so far as they constitute a check or comparison.

Since Lady's failure there is greater need than ever for the discovery and development of other telepathic animal or human subjects and their careful study under controlled conditions. We hope that such studies may be made possible.

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# THE CHEMICAL THEORY OF TEMPERAMENT APPLIED TO INTROVERSION AND EXTROVERSION

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WE CAN hardly hope to make progress in the understanding of the differences between one personality and another until we shall have achieved some agreement as to the main classes of constituent factors of personality and some consistency in the terminology we employ in discussing them. We have seen in recent years a number of interesting attempts to distinguish types of personality from the psychiatric point of view. These have, I think, thrown some light on the problems of genesis, especially of psychogenesis, and on the problems of treatment. But all the efforts in this direction with which I am acquainted seem to me to suffer from neglect to distinguish clearly between the main classes of factors that enter into the make-up of personality. They seem to assume that certain types of personality of significance for psychiatry may be distinguished and defined on a single basis, without any prior analysis of the chief classes of constituent factors. In so far all the theories of types seem to me to be at fault.

Personality is extremely complex; it comprizes factors of many distinguishable classes. It seems very improbable that individual differences in respect to any one class of factors should be of such overwhelming influence as to swamp the influence of factors of other classes and to render possible a useful scheme of types drawn up on the basis of that one class alone.

I suggest [1] that, if we are to avoid confusion and many cross divisions of types, at least five great classes of factors of personality must be distinguished. For these five classes seem to be, in great measure, though not entirely, independent variables in the make-up of personality; that is to say, the factors of any one of these five classes may be combined in any one personality with any combination of factors of the other four classes. These five classes are:

[1] In accordance with the scheme which I have long used in teaching and which is indicated in my *Outline of Psychology*.

(1) The factors of *intellect* (under which head I include intelligence and knowledge and such peculiarities as retentiveness of memory, types of imagery, etc.).

(2) The factors of *disposition* (which I conceive to be the array of innately given conative or affective tendencies varying widely in their relative strengths from one individual to another).

(3) The factors of *temper*. These are the least recognized and the most woefully confused and obscured of all by our present chaotic psychological terminology and theory. Yet they are of prime importance in the make-up of personality. I conceive them as general peculiarities of the mode of working of all the conative tendencies or "drives";[2] such peculiarities as persistency, urgency or intensity, high affectability by success and failure, and the opposites of these.

(4) Factors of *temperament*. These may be broadly defined as the influences, direct or indirect, of bodily metabolism (more especially of the endocrine secretions) upon the psycho-physical processes of the nervous system.

(5) Factors of *character*. These are matters of acquired organization of the affective tendencies in sentiments and complexes, which in turn are organized in great systems or (in well developed character) in one hierarchical system.

These five classes of factors of personality are, it seems to me, largely independent of one another; thus any type of intellect may go with any type of temper, temperament, disposition, or character; and so of each of the others; hence, in order to characterize a personality, we must state its type of intellect, of disposition, of temper, of temperament, and of character. When it is attempted to set up types of personality, as so many have done, without first distinguishing these five main classes of factors, the result inevitably is a mass of false generalizations, exceptions to which are at least as easy to find as conforming instances.

Such inevitable confusion is well illustrated, I suggest, by the efforts of Dr. C. G. Jung to define two types called by him the introvert and the extrovert types. That Jung is attempting by the use of these terms to point to some deep-lying and very important peculiarities of personality I have no doubt. I have found the distinction between introversion and extroversion extremely useful, both in theory and in the practical handling of cases of neurotic disorder, and also in understanding normal personalities.

[2] I am driven to use this unsatisfactory word because it is the only one which will serve to indicate to many possible readers what I am driving at.

And many other workers in the field of abnormal psychology seem to have accepted the distinction and made much use of the terms. Yet I feel sure that Jung has attempted to give too rich a content to the terms. He seems to regard the peculiarities which he seeks to define as temperamental; yet, in describing the two types, he assigns to them peculiarities which are peculiarities of intellect, of disposition, of temper, and of character, as well as of temperament proper.

Jung, accepting William James' famous classification of thinkers as tender minded and tough minded, identifies his introverts with the former and his extroverts with the latter. He thus commits himself to the view that introverts are rationalists and system-makers, who care little for facts and forcibly fit data into their ideal constructions in accordance with their *a priori* premises; that the extrovert, on the other hand, cannot construct a system, is interested not at all in the inner life of man, but only in objective facts, is positivist, determinist, fatalist, irreligious and a sceptic. Jung further identifies his introverts with the "classics" of Ostwald and his extroverts with Ostwald's romantics; and thus adds to the characteristics of the former as follows: "They produce with much difficulty, are little capable of teaching or of exercising direct personal influence, and, lacking enthusiasm, are paralyzed by their own severe criticism, living apart and absorbed in themselves, making scarcely any disciples, but producing works of finished perfection."

Jung then chooses as illustrative examples of his two types, Dr. Sigmund Freud and Dr. Alfred Adler, seeking to explain the peculiarities of their psychological teachings as expressions of extroversion and introversion respectively. Could anything be more unfortunate? Freud, with his lifelong intense interest in the inner life of man and his highly elaborated system, is classed with those who are not interested in the inner life and cannot make a system. Adler, who has a large popular following and whose voluminous writings are peculiarly lacking in system and order, with those who cannot exert personal influence and who are paralyzed by their severe self-criticism and who produce works of finished perfection.

While the extrovert is said by Jung to be interested only in the outer world, the introvert is said to shrink from it; "the objective world suffers a sort of depreciation, or want of consideration, for the sake of the exaltation of the individual himself, who then, monopolizing all the interest, grows to believe no one but

himself worthy of consideration." And in many other passages Jung insists on the introvert's lack of interest in the world of sense-perception. It is further implied that the introvert is but little given to bodily exertion and little interested in physical activities. Let us see how this fits with the facts in the case of a great writer of whom we have very full accounts; I mean the late Count Tolstoy. Tolstoy's vivid interest in the inner life of men and especially his own, his seclusiveness, his difficulty in "getting on" with other men, his prolonged internal conflicts and perpetual self-examination, all these traits mark him unmistakably as strongly introverted; yet the author of a recent study [3] insists that "his purely sensory life was unusually vivid and clearly defined. . . . Any description in Tolstoy's work is apt to be striking for the minuteness and accuracy of the detail; his powers of simple observation are probably unrivalled in literature." Again we are told: "He was very fond of eating and drinking, of hunting, riding, walking and outdoor sports of all kinds, of dancing, carousing and gambling." We see here very clearly how the interests and intellectual traits refuse to conform to Jung's demands and to exhibit the alleged correlation with the temperamental trait of introversion. Many other such instances may easily be found.

In one passage Jung ascribes to the extrovert a high degree of docility or suggestibility, a peculiarity which seems to me to be one of disposition rather than of temperament, and one perfectly compatible with marked introversion; and one might ask whether his chosen example of extroversion, Dr. Freud, exhibits high suggestibility. In another passage he ascribes to the extrovert as a distinctive trait great sensitiveness to the regards of other men, a peculiarity which, I submit, belongs to character rather than to temperament.

If we inquire how Jung conceives his introvert and extrovert traits to be founded in the structure of personality, the answer is very unsatisfactory. Although he speaks of the distinction as one of temperament, he cannot regard it as founded in any general chemical influence affecting the nervous system; for he asserts that the conscious and the unconscious parts of the personality are always opposites in this respect, that where the conscious is introverted, the unconscious in extroverted, and *vice versa*. He falls back upon the common but extremely unsatisfactory expedient of postulating two mechanisms, an introverting and an

[3] "Tolstoy and Nietzsche," by H. E. Davis, N. Y., 1929.

extroverting mechanism possessed by all subjects, the one predominating in the conscious life of the introvert, the other in his unconscious (and *vice versa* for the extrovert).

There is in all Jung's discussions of this topic only one statement that seems to me at once illuminating and altogether acceptable, if we are to define introversion and extroversion as pure temperamental peculiarities. This is the passage[4] in which he writes that "hysteria is characterized by a centrifugal tendency of the libido, whilst in dementia præcox its tendency is centripetal".

I suggest that, accepting the cue given in this passage, we can single out of the complexities of the traits to which Jung applies the terms extroversion and introversion, a simple personality factor which is purely one of temperament in the proper or strict sense, the possession of which in various degrees of intensity is an important constitutional factor in every personality. I suggest that all personalities can be ranged in a single linear scale according to the degree to which this factor is present in their constitutions. Those who stand near one end of the scale are the marked extroverts; those near the other are the well-marked introverts; and the greater part of mankind, possessing this factor in moderate degree, stand in the middle region of the scale.[5]

Such a distribution of a temperamental trait is most naturally explained by the influence of some one chemical factor generated in the body and exerting a specific influence upon all the nervous system in proportion to the quantity that is produced and liberated into the blood stream.

Let me illustrate by reference to the internal secretion of the thyroid gland. Each of us seems to have a natural or normal rate of thyroid secretion which plays an important rôle in determining his position in the scale of rapidity of general metabolism. In morbid conditions the rate may be gravely increased or diminished. At or near the one end of the scale stands the sufferer from Graves' disease; at or near the other the victim of myxoedema or thyroid insufficiency. In this case we know that the one end of the scale represents excess of an endocrine, the other end a defect of the same secretion. In the case of the extroversion-introversion scale we have no such clear indication as to which end of the scale represents excess, which defect, of the postulated chemical sub-

[4] "Analytical Psychology," p. 288, London, 1917.

[5] It seems probable that the distribution of degrees of this factor may follow a normal curve; but this is a matter for future research.

stance (presumably an endocrine secretion of some one gland, or possibly a more widely secreted product of the metabolism of various tissues). But I suggest that in all probability extroversion is the positive state, introversion the negative; that is to say, extreme introversion represents a defect, a minimal quantity or minimum rate of secretion of the postulated substance—(let us call it X); and extroversion in its various degrees is the consequence of correspondingly large quantities or rapid rates of secretion of X. My ground for preferring this view will be stated in a later paragraph.

Let me first try to define the difference between what I take to be simple extroversion and simple introversion, the pure temperamental traits as I conceive them. And since introversion is the simpler state, while extroversion (according to the view I am putting forward) is the consequence of the additional constitutional factor X, or if its presence in larger quantity, I begin with introversion.

The marked introvert is the man in whom the inhibition normally exerted by activity of the cerebral cortex on all lower nervous functions is manifested in high degree. We are most familiar with this inhibitory influence of cortical activity in the case of the spinal reflexes. We know that cortical activity depresses or inhibits the spinal reflexes, and that destruction or impairment or arrest of cortical function releases the cord from this inhibitory influence. We do not know how this inhibitory influence is exerted; though it is, I believe, capable of explanation in terms of the drainage hypothesis. Yet the fact is well established in the case of the spinal reflexes; and we have similar though less abundant evidence that the activity of the cortex depresses or partially inhibits in a similar way the functions of the thalamus or of the mid-brain structures in general. I refer here chiefly to the observations of Dr. Henry Head, which show that the protopathic functions of the thalamus are intensified as a consequence of certain lesions of the cortex or of the cortico-thalamic paths.

We may, I think, go further and point to evidence that the cortical regions of highest function (the so-called silent areas) exert similar inhibition upon the cortical areas of lower function, the sensori-motor areas. I refer to the fact, first pointed out by Francis Galton, that children and primitives seem to use imagery in their thinking more freely and copiously than do civilized adults; and that, with the development of powers of reflective and

abstract thinking, the use of imagery seems to decline, to become less free, less abundant, less vivid.

The introvert, then, is the man in whom the lower levels of the nervous system are constantly subject to a high degree of inhibition by the higher cortical activities; and of these lower inhibited functions the most important are the affective or emotional-conative functions of the thalamic region. I have long accepted and taught in my books [6] the view that the emotional functions have their principal seat in the thalamus, and Professor W. B. Cannon has recently adduced evidence which seems to put this view beyond doubt. We may confine our attention to them. Now if my view of inhibition is correct (namely, that it is effected by drainage of the energy liberated in one system of neurones into some other system more actively functioning), inhibition of the affective centers of the thalamus by the cortex does not mean that their excitation is prevented.[7] It means only that the energies liberated in the affective centers is diverted from its normal channels of expression, from all those efferent channels which directly lead to the bodily expressions of emotion; it is diverted or long-circuited to and through the cortex, where it coöperates in sustaining the activities of reflective thinking, a process which results in the simultaneous excitation of various affective tendencies which partially check or neutralize one another so far as external expression is concerned.

Thus the introvert, by reason of the free dominant activity of his cortex and in virtue of its restraining or inhibitory effect on the outflow of thalamic excitation in its normal or direct channels of emotional expression, is a man in whom thought seems to flourish at the expense of emotion. It is not that he is incapable of emotion or strong affects; but his affects do not readily find outward expression; they are absorbed in and disguised by the supervenient cortical activities and the consequent arousal of conflicting tendencies. He seems relatively cold and expressionless; he cannot easily let himself go; his emotional expressions, in word or gesture or other bodily forms, are very moderate and restrained even when he is strongly moved. He tends to be over self-conscious and introspective; and that adds to his general inhibitedness.

Introversion seems then to be the natural consequence of the

[6] *Eg.* in my *Social Psychology*, London, 1908.
[7] Cf. appended note on Inhibition by Drainage.

great development and free activity of the cortex. Hence children in general grow more introverted as they grow up, *i.e.*, as the cortex assumes its full rôle; and primitives on the whole are less introverted than the civilized. The grown dog is more introverted than the puppy; and if we deprive him of his cortex in part or whole by surgical interference, we remove in part this restraining influence on the thalamic levels; he becomes emotional and restless, perpetually on the move so long as he is awake; he regresses to puppyhood.

As the cortex developed its enormous proportions in the human species, there was danger of excessive introversion; danger that the life of phantasy, of reflection, of deliberation, should render men unfit for the life of action and unfit for social intercourse, for maintaining that sympathetic rapport with their fellows which is the basis of all social life and is rendered possible only by a certain freedom of emotional expression. Man's increasing capacity for thinking threatened to diminish unduly his capacity for action and for social life.

Hence nature has provided an antidote against such increasing and excessive introversion. It has generated in the tissues, or in some tissue unknown, an extroverting hormone or endocrine substance X, the function of which is to prevent, to diminish in some measure, this inhibiting paralyzing influence of the cortex upon the more primitive lower-level functions of the nervous system. And the man who is constitutionally provided with a large amount of this antidote to cortical inhibition is the extrovert.

The extrovert, then, is the man who, though he may possess, and commonly does possess, a cortex developed just as highly as that of the introvert, nevertheless does not suffer in the same degree the inhibition of all emotional expressions that characterizes the introvert. Every affect, every emotional-conative excitement, readily flows out from the subcortical levels into outward expression, instead of being largely drained off to and absorbed into the cortex. His emotional stirrings find immediate expression in action, save only on the occasions when some real difficulty or problem compels him to stop to think, or when he makes a voluntary effort to deliberate before action.

Individuals certainly differ widely in respect to this freedom of outflow of affective excitement into action and expression, and I suggest that we shall do well to restrict the terms introversion and extroversion to denote the various degrees of this one simple temperamental peculiarity. For these degrees seem to be the most

essential feature of the highly complex traits to which Jung and others have applied these names.

How, then, may we conceive the postulated internal secretion X to work upon the brain to maintain various degrees of extroversion, to antagonize and moderate the inhibiting influence of the cortex? I suggest that we may find the clue to a simple, intelligible and adequate hypothesis in consideration of the influence of alcohol upon the brain functions (and of ether and chloroform), and that the phenomena of alcoholic intoxication go very far to justify the hypothesis.

I have observed in a number of cases that the markedly extroverted personality is very susceptible to the influence of alcohol. A very small dose deprives him of normal self-restraint and control and brings on the symptoms of intoxication, all of which are essentially expressions of diminished cortical control over the lower brain-levels. The introvert on the other hand is much more resistant to alcohol. He can take a considerable dose without other effect than that he becomes extroverted; that is to say, the predominance of his higher cortical processes over those of lower levels is diminished; he becomes less inhibited in action and expression; he enjoys for the time being the advantages of the extrovert; he talks freely and expresses his emotions in action, gesture, tears and laughter. Alcohol, in short, seems to be an extroverting drug pure and simple so far as its influence on the nervous system is concerned. What exactly, then, is the mode of action of alcohol on the nervous system? In articles published as long ago as 1898 [8] I suggested that alcohol acts directly upon the synapses of the brain to increase their resistances to the passage of the nervous current. In a later publication [9] I have elaborated this view, showing that we have only to conceive that alcohol acts upon the synapses of the various brain-levels, increasing their resistances in the order from above downwards (in the inverse order of their fixity of organization) in order to have a simple and perfectly adequate explanation of all the stages of intoxication. Since this scheme met with the approval of the several eminent physiologists and pharmacologists with whom I coöperated in writing that little book, it may be said to be pretty well founded.[10]

[8] "Contribution towards an Improvement of Psychological Method," *Mind*, 1928.

[9] "Alcohol and Its Effects on the Human Organisms." H. M. S. Stationery Office, London, 1924.

[10] I have further supported this view by showing (by the aid of a special and very delicate laboratory procedure) that alcohol and ether are precise antagonists of strychnine in its influence upon cerebral process; and the probability is great that strychnine works upon synapses to diminish their resistances.

In order to explain extroversion, I make, then, the simple assumption that in the extrovert some tissue (or tissues) normally and constantly secretes the extroverting substance X, a substance whose action upon the nervous system is very similar to that of alcohol (ether and chloroform); that is to say, I assume that the extroverting internal secretion X acts directly upon all synapses raising their resistance to the passage of the nervous current or discharge from neurone to neurone. I make also the highly probable assumption that the synapses of the various levels of the nervous system are in the main solidly and stably organized in proportion to the phylogenetic and ontogenetic age of the levels in which they occur. In other words, I assume that the synapses of the higher levels are the less solidly organized, have higher resting resistances and are less stable, more subject to variation of their resistances by a variety of influences, including the chemical influences of strychnine, alcohol, and the postulated substance X.

According to this view, then, the marked extrovert is he whose metabolism constantly or normally furnishes and throws into the blood-stream enough of the substance X to keep the subject in a state of mild or incipient intoxication. And the position of each individual in the introvert-extrovert scale is a direct and simple function of the amount of X normally secreted by his tissues; the extreme introvert being the man with a well developed cortex and a minimum of X.

I find support for this view in the relation of introversion and extroversion to the incidence of nervous and mental disorder. Jung has expressed the opinion that the introvert is the more liable to neurasthenia and schizophrenia, the extrovert to hysterical and manic-depressive disorder. My own small experience leads me to accept this view. And I would add insomnia to the list of characteristic introvert troubles. The introvert mind or brain does not easily come to rest. The introvert in many cases finds the need of a night-cap in the shape of a stiff peg of whiskey in order to pass quickly into sleep. Further, he cannot easily be hypnotized.

To the list of extrovert peculiarities I would add susceptibility to hypnosis, to crystal visions, trances and automatic actions of all kinds. All these differences seem to mean the greater liability of the extrovert to suffer dissociative effects in the nervous system whether local, as in local functional paralyses and anesthesia, or general, as in general amnesia, trance, hypnosis and sleep. And this is to be expected; for, just as alcohol is a dissociating drug which acts first and most intensely upon those most delicately

organized synapses that are involved in the latest acquired and highest-level processes of the cortex subserving self-conscious control and self-criticism, and involving the reciprocal play of one cortical system of highest level neurones upon another; so also the extroverting substance X may be supposed to affect most markedly these higher level synapses, maintaining during waking life an incipient state of dissociation and rendering easier the onset of all more pronounced states of cerebral dissociation, from normal sleep and alcoholic intoxication to hypnosis and functional paralyses and amnesias. In short, the introvert is the more liable to disorders of continuing conflict, because conflict cannot readily be oviated by dissociation; while the extrovert readily finds relief from internal conflict through the onset of some complete dissociation between conflicting systems and tendencies.

A last point in support of this view may be made by contrasting the British [11] and the American people in respect to introversion-extroversion. It seems beyond question that position in the scale is in the main determined by hereditary constitution, and varies from race to race; some races, like the Negro, being predominantly extrovert, others, like the red men of this country, predominantly introvert. If this is so, how explain the notorious fact that, by and large, Americans are decidedly more extroverted than the British? I do not suggest that all Americans are extrovert. The typical Yankee is perhaps hardly on the extrovert side of the scale. Yet the difference is on the whole considerable. The difference may be perhaps in part explained by the more expansive surroundings of the American. But it seems likely that in the main it is due to the influence of climate on our metabolism. On coming to America we all notice a marked difference of climate which renders it easy to keep running about maintaining social contacts of all sorts. And the Britisher hardly feels the need of the alcohol to which he is accustomed to resort for the relief of his introversion. I suggest that the essence of this climatic effect is the stimulation of the tissue that produces the extroverting substance X, and a more rapid secretion of it into the blood.[12]

[11] British introversion is well illustrated by a recent advertisement labelled "Chatterboxes." Two Britishers foregather for a friendly chat, both smoking in their pipes tobacco of a famous brand. One says: "Good stuff this!" After a silence of five minutes the other replies: "Yes, not bad!"

[12] The observations reported by Dr. C. A. Neymann (at the Atlanta meeting of the American Psychiatric Association, May, 1929) to the effect that active tubercular disease seems to conduce to increase of extroversion, fits very well with this simplified view of the nature of introversion and extroversion and with the chemical theory here maintained.

According to the usage I propose, the words extroversion and introversion would imply solely the two opposite and extremer degrees of a purely temperamental peculiarity, one that is simple, fully intelligible in terms of our knowledge of the nervous functions, and profoundly important from the points of view of education, psychiatry and mental hygiene.

I conclude by drawing attention to the fact that Pavlov describes very clearly two types of temperament in the dogs that served in his experiments on the conditioned reflex.[13] His descriptions of the two types might well serve as definitions of the human introvert and extrovert. If, then, introversion and extroversion are well marked in dogs, the fact indicates that they are based on some relatively simple physiological factor such as is here postulated.

### APPENDED NOTE ON THE THEORY OF INHIBITION ON WHICH THE FOREGOING ARTICLE IS FOUNDED

In an article in the *Journal of General Psychology* (April, 1929), I have argued that the work on conditioned reflexes of Professor Pavlov and his colleagues gives strong support to the hypothesis of inhibition by drainage as formulated in my article in *Brain*, 1903. It is the renewal of my confidence in that hypothesis that has led me to apply it in this article to the problem of the neural basis of introversion and extroversion and thus to give more definite form to the view propounded in my *Outline of Abnormal Psychology*.

It seems worth while in this connection to refer to the excellent review of the present state of knowledge of the nervous functions by Dr. J. F. Fulton (*Muscular Contraction and the Reflex Control of Movement*, N. Y., 1926). Fulton summarily rejects the hypothesis of inhibition by drainage on the ground that no positive evidence for it exists. Now the only direct positive evidence of it we can hope to discover is evidence that the inhibiting process gains in intensity at the expense of the inhibited process. Such evidence is afforded by my observations on graded visual contrast;[14] but this evidence is ignored by Fulton. He proceeds to state two theories of the inhibitory process, the interference theory of Wedensky and the chemical theory of Sherrington. He finds sufficient grounds for rejecting the interference theory, and thus leaves only the chemical theory in the field. Yet Fulton reports a number of facts which go far to justify the drainage hypothesis; and in the end he seems to come very near to it. In the first place, he shows that even though the all-or-none principle be accepted for peripheral nerve-processes, it does not follow that it

[13] Compare my condensed account of these observations in article in *Journ. of General Psychology*, April, 1929, "The Bearing of Prof. Pavlov's Work on the Problem of Inhibition."

[14] *Journ. of Physiology*, March and July, 1903.

holds for the central processes. Secondly, he seems to accept the view that energy liberated in one neurone may be discharged into another. Such discharge (which I postulated under the phrase, the vicarious usage of nervous energy) is, of course, an essential assumption of the drainage hypothesis. He writes: "The extent of after-discharge, therefore, may be taken as a measure of the 'size' of the excitatory 'charge' existing in individual motoneurone; the size may also be measured by the ease with which it may be inhibited, that is to say, by stimulus intensity. In the early part of the stimulation plateau an inhibitory stimulus of given strength is less effective than in a later part, and in the 'after-discharge plateau' it is very much more effective than in any part of the 'stimulation-pleateau'. The charge, or the amount of excitatory substance—in any given motoneurone tends to diminish progressively during the stimulation plateau and diminishes very rapidly during the after-discharge plateau." (Pp. 326.) Here Fulton recognizes that the stimulated central neurone acquires a charge of *something* which it gradually discharges across synapses into efferent-lying neurones. Following Sherrington, he speaks of this *something* as a chemical substance. I can find no good reason for preferring to regard this excitatory charge as a chemical substance rather than as some form of energy (presumably electrical). But the main point is that the facts compel us to believe that stimulation of a neurone generates in it a "charge" which is more or less gradually discharged into other neurones.

There follow a number of statements which are perfectly compatible with the drainage theory but hardly compatible with the chemical theory of inhibition; *e.g.*, "Prolonged stimulation of the cortex not infrequently gives rise to localized epileptiform convulsions of various parts of the musculature. And, as in typical Jacksonian epilepsy, the convulsion may occur simultaneously in antagonistic muscles." (P. 452.) Of similar significance are the phenomena of double reciprocal innervation. "When two afferent nerves, one of which causes flexor contraction and extensor relaxation, the other causing the converse of this—flexor relaxation and extensor contraction—are stimulated simultaneously, the strength of the respective stimuli may be so adjusted that contraction occurs in both flexor and extensor muscles without movement. By slightly altering the relative strength of stimuli either the flexor contraction or the extensor contraction may be made to predominate." (P. 453.) Further: "This result [balanced excitation of the antagonistic muscle-groups] is sometimes difficult to demonstrate experimentally because unless the balance is perfect (and the stimulation brief) the usual result of opposing inhibitory and excitatory stimuli is rhythmic contraction similar in every way to reflex walking. In other words, when the spinal centers of the hind limb are subjected synchronously to excitatory and inhibitory stimulation, the extensor ('half') centers on one side first become dominant and then the extensor 'half-centers' on the other side and so on. But the excitatory dominance of one or the other is always associated with simultaneous inhibition of

the symmetrical 'half-center'. The usual effect of opposing stimuli, therefore, is rhythmicity. . . . The fact that the rhythmic stepping occurs in a pair of isolated knee extensors excludes the possibility that the antagonistic muscles and their nerves are necessary in so far as generation through them of secondary reflexes is concerned. Moreover, reflex walking is observed in response to concurrent stimulation of both peroneals after the two isolated extensors have been de-afferented." (P. 468.) That is to say, continued stimulation of the two afferent nerves, in the absence of all other afferent impulses, may cause in the antagonistic muscles either balanced equal contractions or rhythmic alternation of contraction and relaxation, the contraction of the one coinciding in time with the relaxation of the other. All this seems perfectly compatible with the view that we have to do here with a simple switching or deflection of afferent streams of energy from the one efferent path to the other. But it is very difficult to reconcile with the chemical theory, which postulates that central inhibition is due to the production at some point in the stimulated tract of an inhibitory substance. For it would seem that the longer the action of an inhibitory stimulation producing such a chemical effect, the greater must be the store of inhibitory substance produced. How then should continuation of a stimulation which produces such inhibitory substance do other than prolong the inhibition and render excitation more difficult. And in the phenomena of successive spinal induction we have evidence that such cumulative inhibitory effect of stimulation of an afferent nerve (such as the chemical theory would seem to demand) does not occur. Not only does it not occur, but rather the opposite effect occurs. "In a reflex center during inhibition there occurs an intrinsic change, which within limits as it proceeds, renders the inhibitory influence less effective and favors the effect upon it of excitatory influence." (P. 470.) Here, it seems to me we have, in the words of the author of the chemical theory of inhibition (Sherrington), a direct refutation of it. The inhibiting stimulus is assumed to inhibit by way of causing the production of an inhibitory substance at some point in the nerve path; yet it is also assumed to cause in the same path "an intrinsic change" which progressively renders its own inhibitory influence less effective and favors excitation. Are not the two assumptions mutually incompatible? They can be reconciled only by making the complicated assumption that the stimulus has two local effects, the production of both inhibitory and excitatory substances, and that under constant stimulation the production of the former begins at a maximum rate which declines, while the production of the second begins at a slow rate which increases; so that the effect is at first an excess of the inhibitory substance, and, at a later stage, such accumulation of excitatory substance as will suffice to overcome the influence of the inhibitory substance. Such complicated assumptions seem very improbable. If, on the other hand, as I pointed out long ago (supporting the suggestion with an array of indirect evidence) we suppose the synaptic transmission-process to be subject to a rapidly

oncoming fatigue, we have an adequate interpretation of the phenomena of rhythmic alternation and of successive spinal induction, in terms of a simple switching of the current from one path to the other as the balance of resistances in the two paths concerned tips from one to the other.

Finally, in discussing the inhibition exerted on the spinal reflexes by the cerebral functions, Fulton assumes that the cortex sends down inhibitory impulses to spinal internuncial neurones, and that the direct path across the cord from afferent to efferent neurone is thus blocked. "In view of the extensive bifurcation of the incoming posterior root fibers, the end-result of operation of such a mechanism would be that while the local reflex path across the cord would become obliterated, the ascending paths to the mid-brain would remain functional, and in this way incoming impulses would be *deflected* up the cord for higher integration. . . . It would appear, moreover, that so long as a given controlling higher center is present the majority of afferent impulses are *long-circuited* in this way. When, however, the higher centers are cut away, the majority of impulses pursue the phylogenetically older paths across the cord."[15] Fulton cites experiments made by Amsler which show that a similar relation obtains between the cortical and the thalamic functions; and this is of especial interest in connection with the present paper, because my argument is based on the assumption of just this relation. "Amsler concluded from these observations that so long as the cerebral cortex remained intact the pain impulses were long-circuited through this organ [the cortex]. . . . When these higher centers were removed, the nociceptive impulses then immediately traversed the phylogenetically older reflex paths of the thalamus." (P. 532.) This long-circuiting of impulses from thalamus to cortex, together with the inhibition of the efferent discharge from the thalamus, is the principle upon which I have chiefly relied in the body of this article. But it remains a question of great interest—Does the long-circuiting from lower to higher levels take place because, as Fulton believes, the higher level sends down inhibitory impulses that block the efferent discharge at the lower level, so that the afferent impulses of the lower level thus find a path of least resistance through the higher level? Or does the long-circuiting take place because the higher levels when active (*i.e.*, in the waking state) are intrinsically paths of lower resistance than the more direct lower-level paths of efferent discharge, the inhibition of the efferent discharge of those lower-level paths following upon the long-circuiting or diversion of the afferent impulses to the higher level? Here, as in all other cases, the conception of inhibition by drainage offers a simple and adequate interpretation of the facts in place of the highly complicated assumptions rendered necessary by the chemical theory.

That the activity of the cortex should modify the nature of the spinal reflexes by direct action through the pyramidal tract would remain consistent with the drainage theory; but according to that theory this would be affected through excitatory impulses descending the pyramidal tract

[15] Italics mine.

and modifying the relative resistances of the efferent spinal synapses by favoring some synapses as against others.

Fulton accepts the view that the immediate effect of light upon the retina is the liberation of an excitatory chemical substance in rods and cones; a substance which continues to excite the nerve-fibers after the light-ray ceases to act; and he takes this as a model of excitatory processes in general. Now (as described in my "Observations in Support of T. Young's Theory of Light- and Color-Vision", Mind, Vol. X, 1900) the after-image thus generated normally undergoes a steady decline of intensity which may be prolonged during many seconds or even minutes. During this period of decline the after-image may be inhibited many times (by intenser stimulation of any other part of the retina). At each inhibition it disappears suddenly and completely, and returns equally suddenly and completely; and the normal curve of decline of intensity is not appreciably affected by these periods of inhibition.* This seems to be good evidence that the inhibition is not dependent upon the production of an inhibitory substance that antagonizes the excitatory substance; for, if it were of that nature, one should expect all grades of neutralization of the excitatory effect. Instead, we find that the inhibitory effect occurs according to the all-or-none principle. Again, an inhibitory phenomenon perfectly consistent with the drainage theory, but very difficult to reconcile with the chemical theory of inhibition.

Fulton, then, shows good reason to believe that excitation of the neurone produces suddenly within it a charge of *something* which is discharged more gradually across the synapse into the efferent neurone, and that, where there is more than one synapse with efferent neurones, the discharge follows the path of least resistance. These are the essential postulates of the drainage theory. Only one other is necessary, namely, that the synaptic resistance is a variable function, which can be diminished by excitation of any neurone taking part in the structure of the synapse. If these postulates be granted, inhibition by drainage follows as the inevitable consequence. Fulton admits the variability of synaptic resistances, but assumes that they can be varied only in the direction of increase of resistance by means of excitatory impulses which, in virtue of their impingement upon some peculiarly constituted part of the neurone, produce an inhibitory substance. By implication he denies *facilitation;* I find no discussion of facilitation, and the word does not occur in the very full index. Yet is not facilitation a fact? Facilitation is the third postulate of the drainage theory. If facilitation be granted, I do not see how inhibition by drainage can be denied.

Why then so much resistance to this hypothesis? Fulton adduces no facts or reasonings that rule it out; he rejects it on the ground that there is no direct evidence supporting it. Well, my observations on graded

* My description of these phenomena, of fundamental importance to the understanding of the retino-cerebral processes, have been ignored for nearly thirty years. They have recently been described anew in detail by Prof. Abbecke of Bonn.

contrast were made through using it as a working hypothesis; and they provide direct evidence in its support. And it is not likely that other such evidence can be found, until observations are directed by the working hypothesis to the discovery of further evidence of this nature, evidence that the intensity of the inhibiting excitation gains at the expense of the inhibited excitation. It seems not unlikely that Pavlov and his colleagues, if they had used this working hypothesis, might, by means of their very delicate methods, have obtained abundant evidence of this nature.

# THE MAJOR DESCRIPTIVE CATEGORIES OF INHIBITION IN PSYCHOLOGY

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IT IS extremely unsafe to elevate any one or two phenomena to a position of central importance in any science. Nevertheless, the writer believes that there is ample reason so to elevate the processes of inhibition and facilitation. If one thinks in terms of the concepts of attention, association, retention, habit, instinct, and the like, one can easily think of the processes of inhibition and facilitation as lying behind these so-called "functions". A mentalist or a behaviorist can make good use of these concepts with equal felicity.

While we are proposing the concepts of inhibition and facilitation as being fundamental for psychology, the fact remains that these terms were born in the physiological laboratories. The result is that most psychologists are timid about using the concepts in any other than purely neurological terms. In this article we wish to maintain that psychology has the right and duty to formulate its concepts in its own way, in accordance with its own special needs and considerations. This means that our usage of the terms inhibition and facilitation may or may not mean the same as the physiological terms. We shall accordingly take the liberty in this paper of forgetting all about nerve-physiology and we shall formulate a system of classification of inhibitions on a psychological level which, we hope, may have some usefulness and validity. Space does not permit of a similar treatment of facilitation.

The reason for this paper lies in the fact that no one has attempted to classify systematically the forms of inhibition, although several textbooks are now presenting several forms of this phenomenon. Ordinarily, in the history of any scientific study, one finds a rather exhaustive descriptive stage which is then followed by a stage of systematic classification. Finally come the theories of explanation. In the case of inhibition (in psychology) this has not been the case. There is no systematic presentation, on a descriptive level, of the forms of inhibition.[1] On the other hand, considerable *physiological speculation* has been reported.

[1] A practical classification for the physiologist of forms of inhibition has been made by Meltzer, *New York Medical Journal*, 1899, May 13, 20, and 27.

The writer is quite willing to subscribe to a physiological (biochemical) theory of any psychological process but it seems very desirable to present first of all adequate accounts, on a descriptive level, of psychological phenomena which may be brought under the concept of inhibition.

After a somewhat careful study of various textbooks and journal statements of inhibition, the writer concludes that the term has come into good standing in psychology and has a quite well accepted denotation. In all cases inhibition is used to refer to some sort of interference exerted by one mental process upon another. If a given mental process is present, another mental process may, in some way, cut-in, block, or inhibit its further progress. This interference or blocking may be partial or complete, temporary or relatively permanent.

With this general definition in mind we suggest that all forms of inhibition be placed under one or the other of two great categories, namely, *voluntary or involuntary.* The terms *active* and *passive* may be used instead of voluntary and involuntary, if desired.

Inasmuch as the older lines of demarcation between voluntary and involuntary are breaking down as fundamental distinctions, many will object at once to any such classification. Our reply is that, for better or worse, we still find the distinction between voluntary and involuntary useful and employ it in our everyday speech. People in general, and beginning students of psychology in particular, make the distinction and it really has a significant meaning in their lives.

By a voluntary form of inhibition we refer to an active, self-conscious effort which results in inhibition. Some years ago we might have dared to call these inhibitions "inhibitions by the will" but, just as psychology has lost its functional soul, so the "will" has come into disrepute as a real "doer of things".[2]

By involuntary inhibition we refer to any form of inhibition which is not the direct issue of an effortful conscious process. It acts on a passive level and may be a negative aspect of a positive voluntary process.

### FORMS OF VOLUNTARY OR ACTIVE INHIBITION

The first form of voluntary inhibition may be designated as *inhibition or suppression of images or ideas in recall.* Any and

[2] Th. Ribot dared entitle his book "Diseases of the Will" (1915, Open Court Pub. Co.). His examples are all forms of what we would call weaknesses in voluntary inhibition.

all kinds of voluntary inhibitions of ideas or thought-processes are included under this heading. Ordinarily these forms of inhibition are treated under the rubric of attention-inhibition, or, as is more likely to be the case, the term inhibition is not used at all. To the average man these forms of self-active, voluntary inhibitions or repressions are of paramount interest. For the psychologist they may be considered as expressions of a personality-synthesis that exists and acts in its own rights—but subject to law and order, of course. Such inhibitions involve conflict and a feeling of effort.

The second form of voluntary inhibition may be called *inhibition of sense-presentations.* Here we refer to the process of voluntarily setting our minds to a given thing in spite of sense-stimuli which have been distracting. In spite of the sounds of the neighbor's piano one succeeds in concentrating on one's work. In fact, as Morgan [3] and others have shown, one may actually do better work under conditions of unusual sense-stimulation (distraction).

The third kind of voluntary inhibition may be termed *inhibition of motor responses.* Here we refer to a voluntary interference with a movement already in progress. One may suddenly, by a volitional act, stop talking, laughing, or walking. Some may seriously question the distinction which our classification seems to make between these motor inhibitions and those indicated under the first form which was mentioned above. The classification is convenient, however, and while we may admit that control of movement is merely a control of ideas, the involving of motor-mechanisms gives these forms of inhibition a certain descriptive significance and distinctiveness.

A word may be said concerning "inhibitions of impulses to act". We would class such inhibitions under the first two forms above mentioned, assuming that the impulse to act is essentially a consciousness of an idea associated with the action. The kinaesthetic core of the idea would, in such a case, be a memory image. On the other hand, it is possible that the impulse, as a state of consciousness, is the sensory aspect of muscular adjustment already in progress. In this latter case we would be dealing, in part at least, with our third form of voluntary inhibition.

A very perplexing problem arises at this point. If, as some writers suggest, there may be a co-consciousness, the question

[3] The Overcoming of Distraction and Other Resistances. *Archives of Psychology*, V, 1916, No. 5.

arises concerning the proper classification of the "willings" of this co-conscious mind. In that very remarkable study (made and reported by Morton Prince)[4] of the Beauchamp Case, one is almost forced to agree with Prince that the Sally-personality is a co-conscious personality who exerts her will in the family affairs to an extraordinary degree. I know of no other way out of it than to say that we have "wilful" or "voluntary" inhibitions exerted by a sub- or co-conscious mind. At present many psychologists refuse to admit any co-consciousness and so have not had to face this problem.

### FORMS OF INVOLUNTARY OR PASSIVE INHIBITION

Those psychologists who have neither faith in nor sympathy with such designations as voluntary, willed, active, or conscious inhibition will consider the above classification as not only useless but actually pernicious—a veritable back-sliding in scientific progress. We can only answer that we feel unable to give up such concepts in our psychologizing because we find them useful. Perhaps those who find fault with the above classification will find the following much less objectionable. Our approach is here of a different sort and we are content to think of inhibition as a purely physiological affair in which the terms voluntary or willed have no part.

The first class of involuntary inhibitions may be termed *inhibitions operative in association-formation or learning*. Here we refer to those interferences which operate to prevent the forming of associative bonds in any form of learning. We presume that all learning, whether sensory, ideational, or motor, has its locus in the cerebrum and consists in establishing functional connections (lowered resistances of synapses?) between neurones. Hence we need make no distinction between different forms of learning, although such distinctions may be quite desirable from other points of view.

Most of the recent textbooks of psychology mention, with more or less discussion, two forms of inhibition which operate during the learning process. Since these two forms are very well known we will merely mention them. One form is known as *associative inhibition* and refers to an interference wrought by an older learning upon a subsequent learning. Having learned A-B, this interferes with the subsequent learning of A-C. In other words this form of inhibition is a *forward-working* inhibition. The other

[4] See his "Dissociation of a Personality"; also "The Unconscious".

form of inhibition is known as *retroactive inhibition.* Here we find a "backward-working" inhibition. Having learned A-B, then the learning of C-D (subsequently) works backward in a detrimental manner, interfering with the forming of the association A-B. These two forms of inhibition were first experimentally demonstrated and named by the German psychologists, Müller and Schumann [5] in 1894 and Müller and Pilzecker [6] in 1900. While the general concepts of these two forms of inhibition are fairly well agreed upon, many confusions and ambiguities yet remain.

Some psychologists emphasize that the phenomenon of retrograde amnesia is the same as that of retroactive inhibition. The writer,[7] in a previous paper, has tried to indicate that this view is incorrect. In this paper we would place retrograde amnesia under the following form of inhibtion.

A third form of learning-inhibition we may call *affective or emotional inhibition.* We are unable to find this form of inhibition specifically mentioned in any text, but we believe that it is a real and exceedingly important form of interference. The term "affective is not a particularly fortunate one as many psychologists draw a sharp line between affections and emotions. It is quite possible that one may be forced to differentiate affective and emotional inhibition in the future although at present the terms are being used interchangeably.

The writer knows of no definite laboratory results which show cases of affective inhibition which act detrimentally upon learning, unless we consider the effects of punishment in animal learning as examples, which we may reasonably expect to be the case. E. L. Thorndike's Law of Effect is, in part, we believe, a Law of Affective Inhibition.[8] We do not hesitate to suggest that there is some inhibitory process at work, under certain emotional conditions, which works a positive interference with the forming of associations.

Abnormal psychology and daily life testify to the above statement, we believe. Retrograde amnesia, insofar as it results from an emotional shock rather than an actual physical concussion, seems to be an outstanding form of affective inhibition. On the other hand, there is the possibility that these forms of inhibition, in-

5 "Experimentelle Beitrage zur Undersuchung des Gedachtnisses." *Zeitschrift für Psyhchologie,* VI, 1894.

6 "Experimentelle Beitrage zur Lehre vom Gedachtniss." *Zeitschrift für Psychologie,* I, 1900. (See, also, monographs in Psychological Review series from 1910 to 1925.

7 "The Concept of Retroactive Inhibition." *Psychological Review,* 33, 1926; 237–44.

8 "Animal Intelligence." 1911. Page 244 f.

cluding retrograde amnesia, should be placed under the next class, namely those which operate during the recall. The original learning may not have been interfered with but the person may simply be unable to recall.

The second class of involuntary inhibitions we will designate as *inhibitions which operate during the process of recall.* They might better be called *reproductive inhibitions.* Unfortunately the psychologist uses the term "reproductive inhibition" in a very limited way which seems to rule out emotional elements. We will use the term to refer to any and all forms of inhibitions which operate involuntarily during the process of recall.

Such reproductive inhibitions may take many and varied forms. It is quite probable that future work will compel us to make several sub-classes or kinds of this general form of inhibition. Just now we seem justified in distinguishing two forms, namely, cognitive and emotional. The psychologist has failed to publish in his textbook any discussion of emotional blockings or interferences.

On the cognitive or purely intellectual level one notes many examples of blockings in recall. A word is on the tip of one's tongue but will not come. A well-known name cannot be aroused when we wish to recall it. The reader can at once think of any number of such examples of blockings in recall.

The experimental laboratory has contributed numerous studies of reproductive inhibitions. We may merely mention, in passing, the work by Shepard and Fogelsonger [9] and a very recent work by S. Pan,[10] as examples of laboratory demonstration. Such experiments have been very important in enabling us to make a finer analysis of the processes involved. The attitude or context of the original learning is found to be exceedingly important. Any change in attitude or context may work detrimentally in recall.

We wish to emphasize especially the inhibiting rôle played by emotions under certain conditions. Becoming emotional, we find that our set speech fails us, or the well-learned examination material seems obliterated. Anger or grief completely disrupts our flow of associations. Abnormal psychology can supply any number of cases where the recall process is effectively blocked by the emotional factors. After finding almost no discussion of the effects of emotional factors in recall in the psychology textbooks one does not wonder that academic psychology so often is classed as a static

[9] "Studies in Association and Inhibition." *Psychological Review*, 20, 1913, 290–311.
[10] "The Influence of Context upon Learning and Recall." *Journal of Experimental Psychology*, 9, 1926, 468–92.

rather than a dynamic study of human nature. This is just one of numerous cases where the purely intellectualistic aspects of life are emphasized in psychology.

A third general class of involuntary inhibitions may be known as *sensory inhibitions.* Two forms of inhibitions may be here mentioned, although the distinctions may be more apparent than real. The first form is really only the negative or passive side of the attention. If, as Shepard and Fogelsonger [11] have so well suggested in their work, every attention process is a double-sided process involving inhibition and facilitation, then one may regard the inhibitory aspect of any involuntionary process as falling under this third class. When one is attending to something else his name may be called several times without his becoming aware of the fact. The soldier, though wounded, is not aware of any pains while the engagement lasts. The hysteric is not aware of any pain sensations which might ordinarily be aroused because, in part at least, the same principle is operative.

The second form of sensory inhibition partakes somewhat of the nature of the above-mentioned form but has certain characteristic features of its own. It seems to involve a direct inhibiting effect exerted by one stimulus upon the conscious effects produced by another. Heyman's Law expresses this form of inhibition somewhat as follows: . . . "the inhibitory power of a stimulus, measured by the stimulus whose effect it can just completely inhibit, increases in direct proportion to its intensity".[12] Perhaps this form of inhibition might be called *reciprocal sensory inhibition.*

The fourth, and last, large class of involuntary inhibitions may be termed *inhibitions of motor response.* Here we refer to any interference of an out-going motor response which is not directly volitional or willed. The three following examples taken from a report by G. C. Meyers [13] illustrate this form of inhibition.

"J ceased crying when I whistled (2 days old)."

"B stopped nursing when I made a variety of sounds (7 days old)."

B will stop crying when the door of the room is opened (25 days old)."

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[11] *Op. cit.*

[12] As given by J. E. Anderson, "On Inhibition of the Differential Threshold in Accordance with Heyman's Law." *American Journal of Psychology,* 36, 1925, 461–63.

[13] "Infants' Inhibitions. A Genetic Study." *Pedagogical Seminary,* 29, 1922, 288–301.

SUMMARY AND CONCLUDING STATEMENT.

This paper attempts to present a systematic classification, on a purely descriptive level, of various forms of inhibition which may be found in the study of psychology. Holding that the concepts of inhibition and facilitation should be considered as corner-stones of psychological discussion, the following categories have been suggested:

I. Voluntary or Active or Willed Inhibitions:
   A. Of images or ideas in recall.
   B. Of sense-presentations.
   C. Of motor activity.

II. Involuntary or Passive Inhibition:
   A. Operative at the time of learning:
      1. Associative inhibition.
      2. Retroactive inhibition.
      3. Affective or emotional inhibition.
   B. Operative during the process of recall (reproductive):
      1. Cognitive or intellectual interferences.
      2. Emotional or affective interferences.
   C. Sensory inhibition:
      1. Negative, passive attention-inhibition.
      2. Reciprocal sensory inhibition.
   D. Motor inhibition.

The above classification is doubtless open to many objections. However, it should help the beginning student in psychology to get some sort of systematic survey of inhibition. Some such classification might prove useful as a common ground for both normal and abnormal psychology. If the above classification does no more than call forth criticism and challenge some one to make a more useful fundamental classification it will have served its purpose.

# THE EFFECT OF HYPNOSIS ON MUSCULAR FATIGUE

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## INTRODUCTION

THE only experimental study that is closely related to the present investigation is that of Nicholson.[2] In his investigation, Nicholson used Mosso's ergograph to determine the normal amount of work done by the subjects and then proceeded to determine (1) The influence upon the amount of work done by the subject of suggestions that the subject should not suffer fatigue and that he should be able to display increased strength and endurance. These suggestions were given continuously (?) throughout the work periods which took place in the trance state. (2) The amount of work a normal subject is capable of performing on being brought back to the normal state after working to exhaustion in the trance. (3) The amount of work a subject can do when he is re-hypnotized after working to exhaustion first in the trance and again to exhaustion in the normal state as described in (2). (4) The amount of work a subject can do in the trance state when he has been hypnotized immediately after exhausting himself in the normal state. (5) "The effect that hypnosis, *per se*, exerts on muscular work." A further investigation, not of significance to the present study, was made on the effects of similar suggestions given during the normal state when the subject was already exhausted in that state.

In general, Nicholson reports that "a very definite increase in muscular efficiency can be obtained by suggestion in the hypnotic state". This is shown by "an increase in the amount of work

[1] From the Psychological Labaratory, University of Wisconsin. The writer wishes to acknowledge the assistance rendered by Professor Clark L. Hull in supervising the experiment.

This is the fourth of a series of Wisconsin studies on hypnotic phenomena, but the third to be published. These are: Messerschmidt, R., "A Quantitative Investigation of the Alleged Independent Operation of Conscious and Subconscious Processes. JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY, Vol. XXII, No. 3, 1927; and Strickler, C. B., "A Quantitative Study of Post-Hypnotic Amnesia." *Ibid.*

[2] Nicholson, N. C. "Notes on Muscular Work during Hypnosis." Johns Hopkins Hospital Bulletin. Vol. XXXI, March, 1920, p. 89.

Nicholson himself died before completing his projected series of investigations. This may account for some of the inadequacies of the study as reported.

done", "an increase of endurance" and "a decrease in fatigue both subjective and objective". In addition, he found that he could obtain a normal amount of work from a subject immediately on changing him from the trance to the normal condition. On changing instantaneously from the normal state into the trance, he found a marked increase in the amount of work and it also seemed "possible to continue to produce such a work-curve indefinitely". Similar effects were not secured when identical suggestions were made at the point of fatigue in the normal state. Unfortunately, the results of the experiment concerning the effect of hypnosis, *per se*, upon the amount of work performed, were vitiated owing to the fact that this part of the experiment was the last in the series and the subjects participating in it had already been trained to react to suggestions in the trance. It is fairly evident that some of the effects of the training in reacting to suggestion have carried over into this part of the work so that these records also show the effects of suggestion on the work performed. Nicholson's report, then, deals with the relative amount of work done in the normal state compared with that "in the hypnotic sleep where suggestions of increased muscular efficiency were given throughout the experiment". It is a truism in all experimental work that the experimental series should differ from the control series in but a single respect. If more than one factor is varied any differences which may be found between the results in the two series can not be interpreted because it will be impossible to tell which of the varied factors the obtained difference may be due to. Nicholson's control series was work in the normal state with no suggestions. His experimental series, on the other hand, was work in the trance with strong suggestions that the subject should not suffer fatigue but should have great endurance. There are thus two factors varied between the two series, (1) being in the trance and (2) receiving stimulating suggestions. It is impossible to tell from such results whether the increased work is due to the fact that the subject was in a trance or the fact that he received encouraging suggestions or to a combination of the two. Nicholson, himself, has recognized this fact in his report but it has been overlooked by some other writers who have quoted his results.

In spite of the fact that the exposition of Nicholson's experiment is fairly clear, there have been some other serious misinterpretations of his results. Young,[3] for example, accepts these

[3] Young, P. C. "Experimental Study of Mental and Physical Functions in the Normal and Hypnotic States. *A. J. P.* Vol. XXXVI, April, 1925, p. 220.

results as indicating an increased ability to resist fatigue due to being in an hypnotic trance. He compares his results on the dynamometric test, without suggestion, with these results which show the results of work with suggestions of increased muscular strength. These results of Nicholson should only be compared with a dynamometric test such as that reported by Hadfield[4] where suggestions were made to the subjects that they were "very strong". In the latter investigation an average increase of about 40 per cent was reported.

Nicholson's work has further been used as a basis for the statement that the "work performed in the hypnotic state had no fatiguing effect upon the subject".[5] While this statement can be justified from the phrasing of the conclusions drawn by Nicholson, it is still necessary to point out that he does not clearly distinguish in some of these conclusions between the effects of suggestion while in the trance state and merely being in the trance state itself, although this is adequately done in his statement of purpose. There are, however, some questions of technique that cast serious doubt on the validity of Nicholson's conclusions. The contractions of the finger are made to the beat of the metronome and an "interval of rest between the contractions" is permitted. This interval is kept constant by the metronome, but if the rest is complete in some of the records it is obvious that this is not the case in his Fig. 4. In this figure the weight is obviously held on the finger during what is supposed to be an "interval of rest". The uneven nature of the bottom line shows this.

In the writer's preliminary experiments an attempt was made to duplicate Nicholson's conditions by giving a period of rest. A subject was given a weight of 4 kg. 500 gr. as against Nicholson's 3 kg. and made the flexion of the finger 80 times to the minute as against Nicholson's 30 times to the minute. In spite of the added weight and increased speed, the subject reported that there was "nothing to this" and that he "could keep it up all night", *i.e.*, the work. At this point he had been working for 32 minutes and the experiment was stopped. This was done with only one subject, but together with the other results given below, it serves to cast doubt upon the validity of Nicholson's study.

A further factor tending to complicate the interpretation of the results is the fact that when Nicholson investigated the amount

[4] Hadfield, J. A. *Psychology of Power.* Macmillan, New York. 1924. P. 11.
[5] *Scientific American.* Vol. CXXXVI, Jan., 1927, p. 48.

of work the "fully awake subject" is "capable of performing immediately after the work done in hypnosis", he permitted a period of rest of "about three minutes" to elapse between the records. There are no controls reported for this. It is accordingly quite impossible to tell from his report the effect of this three minutes of rest.

A question of scientific validity is also involved in Nicholson's use of suggestion. Although all of his part-projects concern the effects of suggestion, no report whatever is made of the suggestion used, the frequency of its use, whether it was a request or a command or on what occasion it was used, *i.e.*, whether at a stated time interval or when the subject was beginning to show fatigue. Furthermore there is no precise quantitative statement of results. It is obvious that such conditions make exact repetition of the experiment impossible and thus violate one of the basic principles of scientific experimentation.

It is only recently that a rigorous scientific methodology has been applied to some of the physiological phenomena of hypnosis.[6] The resuts in such cases have usually been contrary to prevailing belief and show the need of rigorous controls before generalized statements can be made.

A problem that complicates research in hypnosis is the control of suggestion. Without defining the relation between hypnosis and suggestion, it can be accepted as an hypothesis that there is some connection, probably a close relationship, between them. This makes it necessary for a distinction to be made between the effects of the trance itself and any suggestions that me be given either before or during the trance. Particular attention must therefore be paid to the avoiding of unintentional suggestions during experimentation.

There is also the possibility of spontaneous activity on the part of the subject.[7] This has not been adequately recognized in the work reported on hypnotic phenomena as the complete passivity of the subject has usually been assumed. Even the great variability of human subjects in general has not been adequately recognized. This indicates the unsystematic and haphazard nature of most experimentation involving hypnosis as a factor and also the need for caution in interpreting results.

[6] Young, P. C., *op. cit.*

[7] Cf. Young, P. C. "Is Rapport an Essential Characteristic of Hypnosis?" JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY. Vol. XXII, July-Sept., 1927, pp. 130–139.

APPARATUS AND TECHNIQUE

A slightly modified form of Mosso's finger ergograph was used for the measurements. The ergograph was firmly secured to a raised wooden platform so that the sliding part was placed on a level with the finger. It was thus unnecessary to pull upwards as would otherwise be the case. A strip of felt was glued to the wooden arm support as it was found that the subjects would stop pulling on account of the pain in the back of the hand from contact with the wood rather than because of the fatigue in the finger. For a similar reason the harsh edges of the metal tubes into which the first and third fingers were inserted were fitted with rounded brass shoulders so that the pain stimulations at this point were also reduced to a minimum. The chief modification of the apparatus was the development of a new type of ring for pulling with the finger. The original one-piece ring was found to be unsatisfactory owing to the fact that it slipped from the finger even in a moderately fatigued state. The new ring was so constructed that it remained at right angles to the position of the finger whether fully flexed or lying prostrate during fatigue.

Rhythm was secured by a metronome set at 80 beats to the minute. Slight irregularities in the records are thus due to the movement of the kymograph and not to arrythmic contractions. A weight of 5 gk. was used except for two cycles when a weight of 3 kg. was used. These are indicated in the tables.

The amount of work done was recorded simultaneously by two different methods. One was the customary kymograph records such as those shown in Figures I and II. The other was by means of a meter tape set on two revolving wheels one of which was controlled by a ratchet. The ratchet permitted only the extent of the flexions of the finger to be summated. At any moment during the experiment it was thus immediately shown how many centimeters a given weight had been lifted. If further computations were necessary, these measurements could readily be changed into standard kilogram-meter units of work done.

The procedure combined a control series, a means of equalizing practice effects, and a verbal instruction formula that would keep the element of suggestion equal in both states.

In order to obtain an adequate control series, it was first necessary to practice the subjects in the normal and trance states until they had secured rhythmical movements and until no muscular soreness, as distinguished from fatigue, was felt. The actual con-

trol series was secured by alternating the work periods thus: Normal, Trance, Normal, etc. This arrangement also automatically equalizes practice effects.

The verbal instruction formula could not be absolutely identical for the normal and trance states as the subjects had been trained to close their eyes on going into the trance, and they had to be told to open them in order to make conditions comparable. The following instruction formula was used, the additions for the trance being placed in parentheses.

"I want you to pull this weight and keep time with the metronome. I will start the metronome so that you get the rhythm (but do not wake up. You can now open your eyes but you are sound asleep. Now open your eyes and see your record. All right, eyes wide open but sound asleep). There will be no fatigue of your arm and finger and you can make a good record. Ready,—go,—one,—two."

The left hand was used. All the subjects except R S were right-handed.

The practice periods required in this experiment together with the work periods reported here represent the work of 123 experimental periods.

The time of day for each individual subject was kept uniform but there was no set time for the entire group.

The experimenter did his own hypnotizing either by the use of a crystal or by having the subject look steadily at the experimenter's eye. Verbal suggestions of being in a deep trance were added when the eyes had closd.

A slight variation of the technique given above was either to put the subjects into a trance or have them return to normal instantaneously. In this way it could be determined whether the fatigue due to work in the normal state was removed by merely going into the trance and also whether fatigue incurred in the trance carried over into the normal state. No suggestions were given other than those in the formula above. Such results are not strictly comparable with those obtained in the main experiment but have a bearing on one of the popular beliefs concerning hypnosis. It may also be added that these beliefs were confirmed by the results of Nicholson's work referred to above. Table IV and Figure II show the results of this part of the experiment.

In the case of the combined normal-trance work-periods the subject was told beforehand that he would go into the trance by glancing at the experimenter's hand and hearing the command,—

"Sleep, sound asleep." Then the instruction,—"keep on pulling" was given in case he could continue his work and would stop on account of training from previous work with the original experiment. This command was given at the point of exhaustion in the normal state. In the case of the combined trance-normal work-periods the subject was awakened when he had reached exhaustion in the trance by repeating rapidly,—"One, two, three,—wide awake." The instruction to "keep on pulling" was also added in this case so that the subject would continue his work, if possible, in the waking state.

### SUBJECTS

Five subjects continued the experimental work long enough so that at least three complete cycles could be obtained from them. They were junior and senior male students at the university. They were chosen from a group of volunteers on account of their ability to fulfill the minor requirements of the experiment such as being able to come on experimental days at a regular time, etc.

All the subjects were somnambules except K W. This subject had no amnesia for the trance period but all forms of catalepsy could be induced in him. His sensory experiences were identical in every respect with those mentioned later.

### DATA

### I

In Fig. I are shown typical curves of work done by two subjects. These follow rather closely the average types of work to be obtained with the ergograph.

Table I shows in detail the scores made by each subject. These are recorded in centimeters. A cycle consists of the four scores arranged as described in the section on technique.

Table II shows the totals for each cycle in centimeters.

Table III shows the kilogram-meter units of work performed in each cycle, the totals for all the cycles and the per cent increase of work done in the trance.

An examination of the data shows several striking features,—

1. All subjects show a positive increase in the amount of work done in the trance.

2. There is a wide range in the percentage of increase of work performed,—from 1.6 per cent to 52.9 per cent.

3. For three of the cycles out of a total of seventeen, more work was done in the normal state. Two of these were made by E M and one by E Y.

4. Subject R S, who shows the greatest per cent of increase, accomplishes a much smaller total of work done although four complete cycles were made by him.

5. If the records of R S are eliminated, there is an increase of 9.3 per cent in the gross amount of work done in the trance by the other subjects. With R S there is an increase of 12.39 per cent on the gross total of work done. The average increase for the five

FIGURE I

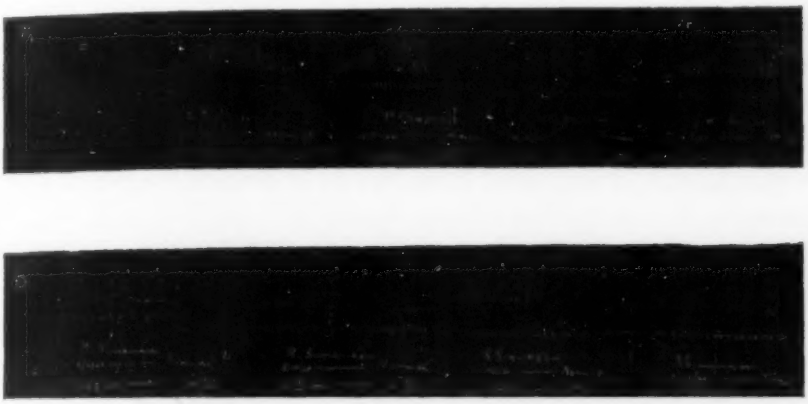

Fig. I. This shows typical work-curves. They read from right to left. The line immediately beneath the ergogram records the time in five-second intervals. The next two lines give the name of the subject, the date, and the state of the subject when the work was done, *i.e.*, whether in the normal or trance state. The last notation at the bottom of each record shows the weight being lifted and the total distance lifted as shown by the integrating tape on the ergograph. Record (A) is a typical cycle of the N T T N type in which there was slight advantage for either state. Record (B), however, shows a cycle with very marked advantage for work done during the trance as compared with the waking control.

TABLE I

Showing Gross Scores in Centimeters Made by Each Subject on Every Trial

| | Cycle I | | Cycle II | | Cycle III | | Cycle IV | |
|---|---|---|---|---|---|---|---|---|
| Subj. | Normal | Trance | Normal | Trance | Normal | Trance | Normal | Trance |
| A T | 58.5 | 83.0 | 52.0 | 67.5 | 56.0 | 59.5 | *128.0 | *141.5 |
| | 63.5 | 63.5 | 60.0 | 63.5 | 57.5 | 61.0 | *133.0 | *125.0 |
| E M | 117.0 | 130.0 | †100.0 | †94.0 | 82.5 | 96.0 | | |
| | 97.0 | 80.0 | †95.0 | †100.0 | 85.0 | 93.0 | | |
| K W | 116.0 | 156.0 | 165.0 | 155.0 | 146.0 | 164.5 | | |
| | 114.0 | 165.0 | 169.0 | 185.5 | 142.0 | 167.0 | | |
| R S | 44.0 | 71.0 | †45.0 | †75.5 | 41.0 | 53.5 | 28.0 | 45.5 |
| | 47.5 | 72.0 | †55.0 | †67.5 | 30.5 | 78.0 | 34.0 | 34.0 |
| E Y | 84.0 | 81.0 | *195.0 | *219.0 | 114.0 | 104.0 | | |
| | 94.5 | 102.0 | *204.0 | *203.0 | 111.0 | 113.5 | | |

* These two cycles were made with a weight of 3 kg.
† These two cycles are shown in Fig. I.

TABLE II

SHOWING SEPARATE NORMAL AND TRANCE TOTALS IN CENTIMETERS FOR THE UNITS COMPRISING A CYCLE

| | Cycle I | | Cycle II | | Cycle III | | Cycle IV | |
|---|---|---|---|---|---|---|---|---|
| Subj. | Normal | Trance | Normal | Trance | Normal | Trance | Normal | Trance |
| A T | 122.0 | 146.5 | 112.0 | 131.0 | 113.5 | 120.5 | *261.0 | *266.5 |
| E M | 214.0 | 210.0 | 195.0 | 194.0 | 167.5 | 189.0 | | |
| K W | 260.0 | 321.0 | 334.0 | 340.0 | 288.0 | 331.5 | | |
| R S | 91.5 | 143.0 | 100.0 | 143.0 | 71.5 | 131.5 | 62.0 | 79.5 |
| E Y | 178.5 | 183.0 | *399.0 | *422.0 | 225.0 | 217.5 | | |

* These series were made with a weight of 3 kg.

subjects is 16.08 per cent with an S.D. of 18.954 and a $P.E._m$ of 5.713, as shown in Table III.

It will be recalled that Nicholson found that after an instantaneous change either from the normal to the trance or the trance to the normal, it was possible to secure a curve of work that approximated or surpassed the one obtained in the first condition. It was decided to check these results when the data recorded in Tables I–III were found to be so different from those reported by him.

A total of eighteen records was made to determine the effect of exhausting the subject in either the trance or normal state and then changing into the normal and trance states respectively while the flexions continued without interruption. The subjects participating in this were A T, E M and R S. Controls were secured by allowing the subject to become exhausted, *e.g.*, in the normal state and then instructing him to "Keep on pulling" without changing the state. This procedure was also duplicated for the trance as a further control.

Typical records for this section are shown in Fig. II.

The detailed scores of the records are given in Table IV.

In Table IV, 5 records show the N(ormal)-T(rance) effects, 6 the T-N effects, 3 each show the N-N and T-T controls. One record shows the composite effect of changing from the N to T to N states without interruption of the ergographic pulling.

The results of these trials show that,—

1. Incomparably less work is done in the second state whether the first is the normal or the trance. This indicates that the fact of being in a trance neither prevents the onset of fatigue nor automatically removes it once it has occurred.

2. The scores made by R S in the second state are lower than those made by the others in all but two cases. In one of these it is equal to the lowest score of A T in the T-N series.

TABLE III

SHOWING KILOGRAM-METER UNITS OF WORK FOR THE NORMAL AND TRANCE RECORDS IN EACH CYCLE, THE TOTALS FOR ALL CYCLES AND THE PER CENT INCREASE IN THE TRANCE

| | Cycle I | | Cycle II | | Cycle III | | Cycle IV | | Totals | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Subj. | Normal | Trance | Normal | Trance | Normal | Trance | Normal | Trance | Normal | Trance | Per Cent Inc. |
| A T | 6.10 | 7.352 | 5.60 | 6.55 | 5.675 | 6.025 | 7.83 | 7.995 | 25.215 | 27.895 | 10.6 |
| E M | 10.70 | 10.50 | 9.75 | 9.70 | 8.375 | 9.45 | | | 28.825 | 29.65 | 2.8 |
| K W | 13.00 | 16.05 | 16.70 | 17.00 | 14.40 | 16.575 | | | 44.10 | 49.625 | 12.5 |
| R S | 4.575 | 7.15 | 5.00 | 7.15 | 3.575 | 6.575 | 3.10 | 3.975 | 16.25 | 24.85 | 52.9 |
| E Y | 8.925 | 9.15 | 11.97 | 12.66 | 11.25 | 10.875 | | | 32.145 | 32.685 | 1.6 |
| | | | | | | | Totals | | 146.535 | 164.705 | 12.39 |

Average per cent increase = 16.08
S.D. = 18.954
$P.E._M$ = 5.713

TABLE IV

SHOWING THE NORMAL–TRANCE AND TRANCE–NORMAL SCORES, THE NORMAL AND TRANCE CONTROL SCORES, AND THE NORMAL–TRANCE–NORMAL SCORE IN CENTIMETERS

| Subject | Normal | Trance | Normal | Normal | Trance | Normal | Trance | Trance | Normal | Trance | Normal |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A T | 43.5 | 15.5 | 61.5 | 2.0 | *67.5 | *4.0 | 54.5 | 7.0 | | | |
| | 49.5 | 6.5 | | | 63.0 | 5.0 | | | | | |
| E M | *86.5 | *12.0 | 80.5 | 5.0 | 84.0 | 2.0 | *76.0 | *5.0 | *85.5 | *16.0 | *0.5 |
| R S | 27.5 | 2.5 | *27.0 | *1.0 | 33.5 | 2.5 | 30.5 | 4.5 | | | |
| | 33.0 | 1.0 | | | 39.5 | 7.5 | | | | | |
| | | | | | 33.0 | 4.0 | | | | | |

* These records are shown in Fig. II.

**FIGURE II**

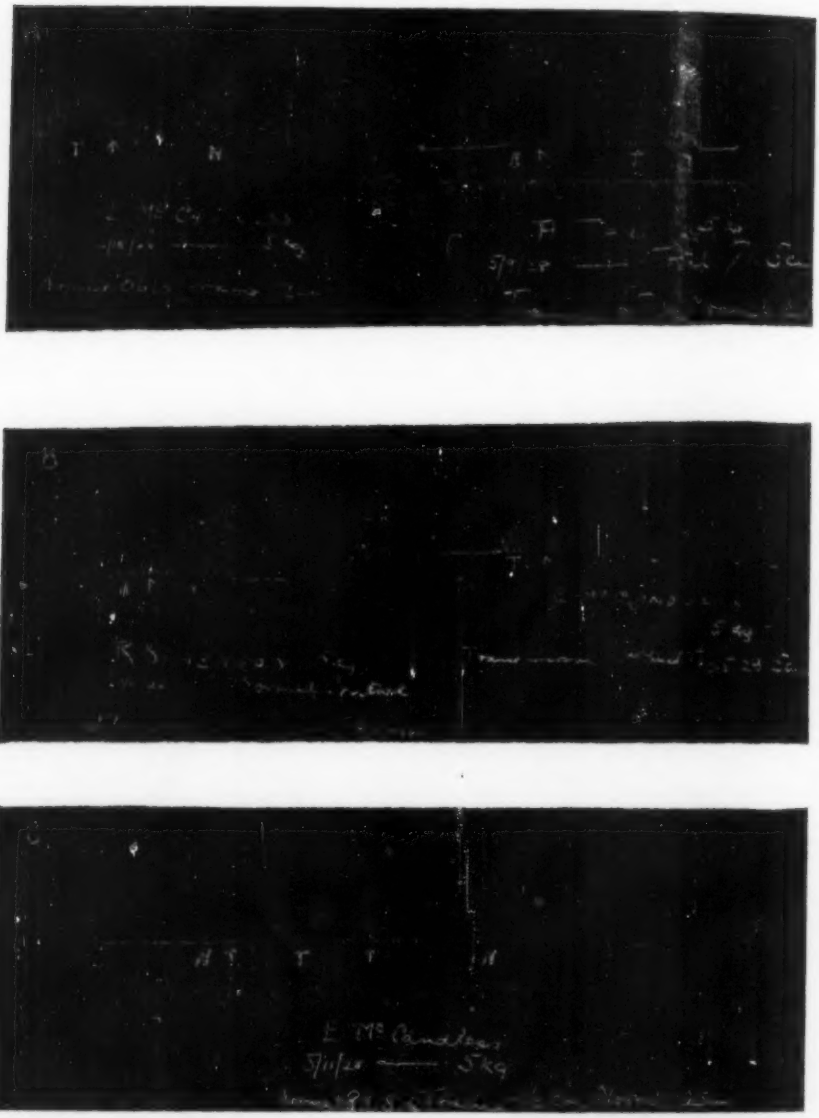

FIG. II. Records read from right to left. Section (A) shows records obtained by changing from T to N and N to T. Section (B) shows the T-T and N-N controls. Section (C) shows a record for the change from N to T to N. The notation is similar to that in Fig. I.

3. The subjects are not absolutely exhausted at the point where the usual fatigue curve comes to an end for work on the ergograph. The controls show that this is equally true whether the first curve was made in the normal or trance state. This has been generally recognized by physiology for the normal state.

The records listed in Table IV suggest that the probable explanation of the increase in the work done in the trance bears some relation to the removal of inhibitions so that this reserve of energy at the end of the ordinary curve is used. A more precise statement than this is hardly warranted by the results.

## COMMENTS AND CONCLUSIONS

This experiment shows clearly the possibility of individual variations in the work done while in the trance. There are variations among the individual subjects and also in the performances of any one subject. This experiment, however, cannot decide whether the large increase in the work of R S in the trance should be interpreted as one extreme of individual variation or as the result of some disturbing influence that has not been controlled. The results shown in Table IV show a reasonable cause for doubting the authenticity of his records. If his records are eliminated, it reduces the range considerably but still leaves a positive increase of work done in the trance.

The subjects whose work is shown in this report uniformly expressed a difference in feeling between the normal and trance states. In the normal state "the weight became heavier" and in the trance the "finger became weaker and would not come up". Whether this was due to the suggestion against fatigue in the instruction formula could not be determined as this was included at the beginning and was maintained to the end for the sake of uniformity.

The data presented seem to warrant the drawing of the following conclusions,—

1. There is an increase in the work done in the trance as compared with that done in the waking state when equivalent positive suggestions are given in each.

2. This increase varies greatly with the different subjects.

3. It is not possible to obliterate the effects of fatigue by merely entering the trance state from the normal or by passing to the normal from the trance.

4. Merely being in the trance state does not prevent the onset of fatigue.

# THE EFFECT OF INSTITUTIONAL LIFE ON CHARACTER TRAITS AS EVIDENCED BY THE DOWNEY GROUP-WILL TEMPERAMENT TEST.

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## INTRODUCTION

THE power of the personal element in the development of desirable personality traits has long been of concern to psychologists and other child specialists. The problem is of practical significance, and has a theoretical and practical bearing on certain modern tendencies in child-caring institutions, which are still in the experimental stage. Among some of the more pertinent questions presented are: Do the master sentiments and attitudes of the individual crystallize better under close personal supervision and interest, or by subjection of the individual to a more largely socialized environment, characterized by impersonal group sanction? It is not known to what extent conformity to similar environment and controlled living conditions such as that provided by an orphan home is influential in affecting such traits as initiative, resourcefulness, self-reliance and character. Neither is it known what influence relative freedom in the expression of one's normal activities and interests as provided by typical home-school life has on the development of desirable attitudes and functions for citizenship. Which condition gives rise to more independence, strength of individual purpose, power of adjustment, and dynamic adaptibility? And which, after all, is best for society—easy suggestibility, integrated personality, or strong individuality? If there are differences between the above influences in personality development, should not the programs and policies promoted by our institutions for dependent children be dictated by the nature and needs of the subjects under their control? As progressive movements continue to demand the attention and interest of institutional officials, it becomes increasingly more important that we subject our methods of supervision and control to objective and critical analyses.

## PURPOSE AND METHOD

The life in an orphanage may be said to present an example of institutional life in which there is less personal influence on the

individual than there is of group sanction. The orphanage presented the most accessible field for securing data with which to compare those from children subjected in a larger degree to personal relationships. Watson[1] says, "We can measure quality of home background", and this study seeks to reveal the chief element that constitutes its "quality". Again he observes, "The home is head and shoulders above other measured influences in determining ethical knowledge and right conduct." This study asks wherein do "other measured influences" differ from the home.

This project was conceived as a part of a mental survey,[2] the general purpose of which was to determine the intellectual status and hereditary influences of institutional children. In this project, the Dearborn Group Intelligence Tests, Series I and II, and the Haggerty Intelligence Examinations, Deltas 1 and 2, were used in the examination of some 1000 or more orphan children found in six different institutions of Texas. For comparative purposes, 500 public school children of the same grades within the state were examined by the same intelligence tests. The conclusion reached from a study of the effect of institutional life on the mental relationship of related and unrelated orphan children, was that environmental conditions (as measured by length of residence and chronological age at entrance) was not a determining factor in causing intellectual resemblance of orphanage subjects. However, intelligence is only one of the several traits of the individual. Whether our thinking be in accord with the behaviorist school or not, it is a commonly accepted view that environmental conditions have a very potent effect in shaping one's emotional, moral, and social disposition, not to mention habits, attitudes and ideals.

From tabulated data secured in connection with the above study, information was obtained for a study of the influence of personal interest upon character development. One hundred children within a chosen range of average I.Q. (the average of the I.Q's derived from the scores on the two tests given) were selected from the children examined in two typical orphan homes. To compare with these, one hundred children of the same range of I.Q., chronological age, school grade, and years in school, were selected from the children tested in the public schools. It was thought that matching the number of years in the orphanage with the number of years in school for public school children would,

[1] Watson, G. B. "Character Tests," *Religious Education*, May, 1927.
[2] Davis, Robt. A. "Intelligence of Orphan Children." Unpublished dissertation. Harvard University Library, 1927.

for practical purposes, reduce the factors affecting the will-temperament to the single variable of every-day-life influence. This was due to the fact that the orphanage children of the ages studied had been invariably subjected to school influence during the period in the institution. Thus, the single variable would differ in the two cases, in the amount of close relations with personal supervision or personal interest. It was assumed that the institutional child's early life, for the group, would be comparable to that of the public school group whose every day life was spent in the home with parental contacts. The matching of material environmental influence was conceived to be secured by choosing children from the two institutions to match public school junior high school pupils. The selecting and matching process reduced the number of each group to 55 each.

The Downey Group-Will Temperament Test [3] used in this study is not proclaimed a true measuring rod. But since close students of the test seem to find that it measures something to the extent of warranting further study, and because it essays to measure the will-temperament, it was chosen as the best available tool. The reason for choosing the Downey Test [4] may further be explained by quoting the author's idea of will-temperament:

"Temperament reveals itself in various patterned forms of activity. These patterns are determined by (1) the amount of nervous energy at the disposal of the individual; and (2) the tendency of such nervous energy to discharge immediately into the motor areas that innervate the muscles and glands; or, on the contrary, to find a way out by a roundabout pathway of discharge.

"Since the organism is a unit, the output of energy and its discharge by a simplified or elaborated pathway color the personality throughout . . . the word temperament is used to refer to an innate relatively permanent disposition. The word will is prefixed to it to indicate the nature of the particular disposition that is tested. This limitation in meaning of the term is necessary in order to avoid a possible misunderstanding; namely, the notion that the test is concerned with emotional reactions.

"The will-temperament determines the form assumed by character, although it does not determine its content . . .

". . . Explosive tendencies which may speed an individual

[3] The abbreviation W-T will hereafter be used for sake of convenience.
[4] Downey, J. E. "The Will-Temperament and Its Testing."

of great ability on to success may ruin a less intelligent man. Inhibitions may nullify genius; they protect a moron."

From these quotations, and the former discussion, the point of view may be understood; that if differences are found between scores made by the two groups on the Will-Temperament Test, they may be due to the difference in influence upon this "innate relatively permanent disposition" described by the word, will. Will is here understood to mean the hormic or conative element of personality; and an attempt is made, from a study of differences in these scores, to determine if causal relation exists between the personal interest element in developmental environment and the case or difficulty of the functioning of this will disposition.

The specific objectives set up by the study were: (1) to determine if the groups differed in the total W-T scores; (2) to find wherein the groups differed on the total score by a study of differences in scores on separate tests within the scale; (3) to find if relation exists between the scores and the period of residence in institutions, or between these scores and period of home life with school.

## RESULTS

With objectives thus set up, the "common factors" were studied from the frequency distributions in Table I. The range of I.Q.'s was from 70 to 93. The original plan for range of I.Q.'s, 90 to 110, was rendered impracticable as a result of matching factors, and the limitations of available data. The median of 85.44 for the public school group, and of 82.30 for the institutional group, show a difference of 3.14 points which may be seen to be offset in part by the difference in medians in chronological age of .73 of a year. The younger children might be less able to understand and score on the test, but for slightly higher I.Q. The median number of years of subjection to the respective influences of home life with school, and institutional life with school differ by .08 of a year. In school grade, the medians differ by .61 of a grade. That the public school group median is higher by that much, may or may not be significant since the opportunities afforded by the school systems represented could not be estimated.

A study of the median scores for the two groups on all items of the W-T test is made in Table II, and graphically presented in Figure 1. When comparing the profiles, the orphanage group is seen to be lower (except on A) than the public school group on all "speed and fluidity of reaction" items (A, B, C, D). On

the "aggressive traits" (E, F, G. H) the orphanage median child is shown to be equal to, or above the public school median child, the equality being expressed in the score on "finality of judgment" (H). In the "carefulness and persistence" group (I, J, K, L) the orphanage group runs lower in all but "volitional perseveration" (L). On the traits named by the author as "pivotal

TABLE I.

NUMBERS OF CHILDREN AND THEIR DISTRIBUTION ACCORDING TO "COMMON FACTORS": AVERAGE I.Q., CHRONOLOGICAL AGE, SCHOOL GRADE, AND PERIOD SPENT UNDER ORPHANAGE-SCHOOL AND HOME-SCHOOL INFLUENCE

| | Orphanage Group | | | Public School Group | | | | Orphanage Group | | | Public School Group | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average I.Q. | Boys | Girls | Total | Boys | Girls | Total | Chron. Age | Boys | Girls | Total | Boys | Girls | Total |
| 92–93 . . . . | | | | | 1 | 1 | 19 | 1 | 3 | 4 | | | |
| 90–91 . . . . | 1 | 5 | 6 | 3 | 8 | 11 | 18 | 1 | 1 | 2 | 2 | | 2 |
| 88–89 . . . . | 1 | 5 | 6 | 4 | 1 | 5 | 17 | 2 | 2 | 4 | 2 | 1 | 3 |
| 86–87 . . . . | | 1 | 1 | 3 | 5 | 8 | 16 | 6 | 5 | 11 | 2 | 3 | 5 |
| 84–85 . . . . | 2 | 4 | 6 | 4 | 5 | 9 | 15 | 2 | 10 | 12 | 9 | 5 | 14 |
| 82–83 . . . . | 4 | 6 | 10 | 3 | 4 | 7 | 14 | 2 | 11 | 13 | 7 | 6 | 13 |
| 80–81 . . . . | 6 | 2 | 8 | 3 | 1 | 4 | 13 | 2 | 5 | 7 | 4 | 7 | 11 |
| 78–79 . . . . | | 7 | 7 | | | | 12 | 2 | | 2 | 1 | 5 | 6 |
| 76–77 . . . . | 2 | 4 | 6 | 4 | | 4 | 11 | | | | 1 | | 1 |
| 74–75 . . . . | 1 | 1 | 2 | 3 | 1 | 4 | | | | | | | |
| 72–73 . . . . | 1 | 1 | 2 | 1 | 1 | 2 | | | | | | | |
| 70–71 . . . . | | 1 | 1 | | | | | | | | | | |
| Total . . . . | 18 | 37 | 55 | 28 | 27 | 55 | | 18 | 37 | 55 | 28 | 27 | 55 |
| Median . . . . | 81.67 | 82.83 | 82.30 | 83.00 | 84.17 | 84.44 | | 16.09 | 15.25 | 15.46 | 15.11 | 14.25 | 14.73 |

| | Orphanage Group | | | Public School Group | | | | Orphanage Group | | | Public School Group | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| School Grade | Boys | Girls | Total | Boys | Girls | Total | Period of Influence | Boys | Girls | Total | Boys | Girls | Total |
| 8a . . . . . | 3 | 1 | 4 | 4 | 2 | 6 | 15 | 1 | | 1 | | | |
| 8b . . . . . | 7 | 7 | 14 | 7 | 3 | 10 | 14 | | 1 | 1 | | | |
| 7a . . . . . | | 11 | 11 | 4 | 4 | 8 | 13 | 1 | | 1 | | | |
| 7b . . . . . | 1 | 11 | 12 | 5 | 9 | 14 | 12 | | 2 | 2 | | | |
| 6a . . . . . | 2 | 4 | 6 | 5 | 7 | 13 | 11 | 1 | 1 | 2 | | | |
| 6b . . . . . | 5 | 3 | 8 | 3 | 1 | 4 | 10 | | 4 | 4 | 2 | 1 | 3 |
| | | | | | | | 9 | | 4 | 4 | 4 | 2 | 6 |
| | | | | | | | 8 | 4 | 5 | 9 | 7 | 7 | 14 |
| | | | | | | | 7 | 6 | 3 | 9 | 9 | 9 | 18 |
| | | | | | | | 6 | 1 | 3 | 4 | 4 | 5 | 9 |
| | | | | | | | 5 | 2 | 10 | 12 | 2 | 2 | 4 |
| | | | | | | | 4 | 2 | 4 | 6 | | 1 | 1 |
| Total . . . . | 18 | 37 | 55 | 28 | 27 | 55 | | 18 | 37 | 55 | 28 | 27 | 55 |
| Median . . . . | 8.14 | 7.05 | 7.14 | 7.25 | 7.64 | 7.15 | | 7.33 | 8.03 | 7.61 | 7.89 | 7.61 | 7.75 |

traits" of the will-profile (E, I) the orphanage median child showed a better balance between "motor impulsion" (E) and "motor inhibition" (I), these scores being 4.04 and 4.21 respectively, while the public school group differed on these scores by 3.80 points. The medians of the total W-T score for the two groups of subjects differ by 4.73 points, the public school children making the higher score.

TABLE II

MEDIAN SCORES ON ALL ITEMS OF THE TEST AND DIFFERENCES FOR ORPHANAGE AND PUBLIC SCHOOL GROUPS WITH PER CENT OF DIFFERENCE ON BASIS OF LOWER SCORES

| Item | Median Scores: Orphanage Group | Median Scores: Public School Group | Point Difference | Per Cent Difference |
|---|---|---|---|---|
| A | 2.36 | 2.35 | .01 | |
| B | 6.85 | 7.50 | .75 | |
| C | 4.60 | 6.69 | 2.09 | 45 |
| D | 4.36 | 9.58 | 5.22 | 119 |
| E | 4.04 | 3.70 | .34 | |
| F | 7.50 | 7.37 | .13 | |
| G | 7.50 | 6.12 | 1.38 | 22 |
| H | 7.50 | 7.50 | 2.00 | |
| I | 4.21 | 7.50 | 2.29 | 56 |
| J | 8.95 | 9.50 | .55 | |
| K | 3.44 | 3.73 | .29 | |
| L | 6.75 | 4.83 | 1.92 | 39 |

The scores on C, D, I, and L on the will-profile showed the greatest difference in median scores for the two groups. In the test labeled C in Table II, the child was asked (1) to work out a disguise of his own handwriting, and (2) to imitate rapidly a rather unusual handwritten model. The working out exercise consisted in writing the "United States of America" as unlike his own handwriting as possible, and then practicing for as long a time as he chose to work at it, to produce an especially good disguise, which was used in scoring. The parts were scored by comparison with models furnished in the manual on quality of disguise. A normal copy of the phrase had been secured previously and consideration of the amount of reversion to this normal handwriting was taken in scoring. The author[5] says of this test . . . "the relatively flexible person we find most at home where he must deal with people or a constantly shifting environment".

The item marked D on the profile, required by the exercise that the child underscore one of each thirty pairs of character traits which he thought he possessed. He was instructed not to

[5] Downey, *op. cit.*

skip any pairs and not to underscore both of a pair since the pairs are designed to express opposing traits. The score is made from the number of decisions made in the time limit of 45 seconds. If there was thought to be a presence of both traits in his make-up, the child was to underscore the one of each pair that "describes you better". According to the author, the list of this test is not chosen in order to furnish the examiner information about the examinee, but to determine how long it takes him to make up his mind concerning the traits he possesses.

The figures show a difference of 5.22 points between scores of the two groups on this test. This figure is 119 per cent of the lower median made by institutional children. The correlation study yielded a coefficient of —.45 between period of residence in

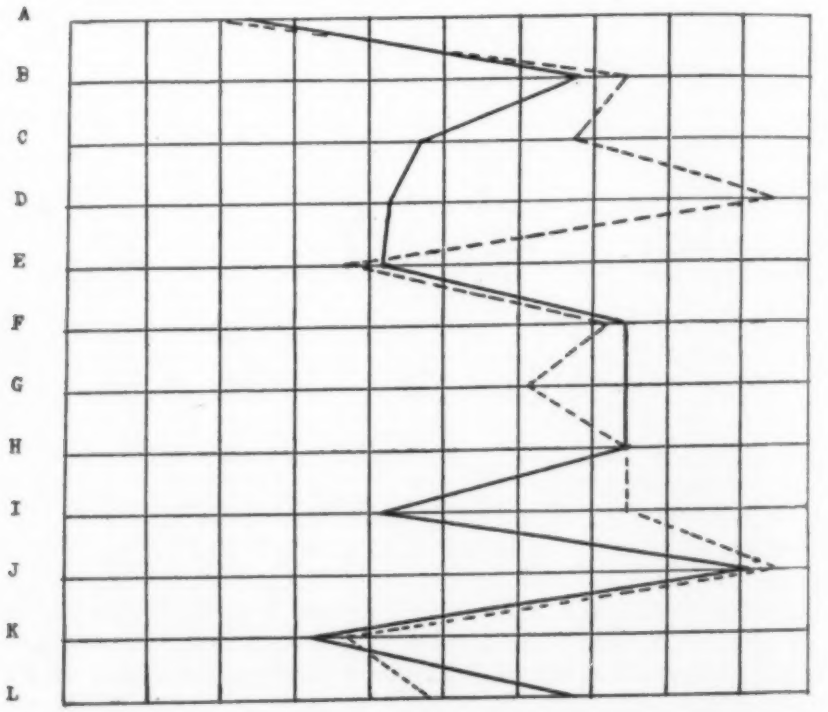


DIAGRAM I

SUPERIMPOSED WILL-PROFILES OF THE MEDIAN-CHILD OF THE ORPHANAGE AND PUBLIC SCHOOL GROUPS TESTED BY THE DOWNEY GROUP WILL-TEMPERAMENT TEST

Public School ----------
Orphanage ——————

the orphanage and score obtained. When the same procedure was repeated for the public school group, the coefficient was zero.

For item G, the test activity was an exercise based upon a previous test for self-confidence, in which a true-false test had been given from a preliminary memory exercise earlier in the testing period. The statements of the true-false test were all true. The child was asked to mark them true or false as his memory served him, and to doubly underscore those he was sure about. Then the child was told that half the statements were true and half were false. Time was given for encircling all he wished to change in compliance with the statement, and mark the opposites. The score was made a ratio between a complete compliance with the statement of the examiner and what he actually did about changing. The score was also dependent upon the number of changes made on doubly underscored judgments, and on those statements about which a mistake could hardly be made from memory.

The difference shown between the group median on this test is seen to be 1.38 or 22 per cent of the smaller score which was made by the public school or home-school influenced group. The correlation study gave a coefficient of —.12 between score and time in orphanage, and —.45 between score and the time in home-school influence.

The test for "motor inhibition" (I) is made by asking the examinee to trace as slowly as possible a scaled scroll consisting of loops in a dotted line, divided into equal sections for scoring. The examiner makes it clear that just as slowly as he can to be moving is the idea. The score is made on the number of sections of the scroll traced in the third trial. For the second and third trials the time is increased one minute each. This test is one for which the author says the norms are "most satisfactory", and is grouped with "motor impulsion" (E) as the "pivotal traits" of the will-profile.

The table gives a score greater by 2.29 points or 56 per cent for the public school than the orphanage group. The coefficient of correlation obtained between time of influence and score for the institutional children was —.28; for the public school group, it was again zero.

The other and last item of considerable difference is observed to be "volitional perseveration" (L). In this exercise the child is told to write "United States of America" as unlike his own handwriting as possible in a test preceding. He was then told, for this

test, to work out a disguise of handwriting by writing the same phrase so different that an expert would be deceived by it. The passing of time was recorded on a blackboard in intervals of five seconds by the examinee. The examinee was left free to satisfy himself as to how long to work, but on becoming satisfied he was to write in a space designated the last number of the list on the board when he looked up from his task. The number formed the key to his score.

The difference between the median scores of the two groups on this test is 1.92 or 39 per cent of the lower score made by the public school children. The coefficient of correlation obtained between scores made by the public school children and the time they had been under home-school influence was —.24; for the orphanage group, the coefficient was zero.

### SOME IMPLICATIONS

This study being essentially one of differences, may be said to set forth figures of so slight a quantitative value as to make a statement of implications from the total scores seemed forced. Yet, the fact that there was found a difference of 4.73 points between the medians of the total W-T scores for the groups, as well as a 45 per cent difference in median score on Flexibility (C), a 119 per cent difference on Speed of Decision (D), a 56 per cent difference on Motor Inhibition (I), a 22 per cent difference for Non-Compliance (G), and a 39 per cent difference on Volitional Perseveration (L) may seem a valid reason for the presentation of some possible meanings not shown on the face of the figures.

The difference of 45 per cent found in the median scores of the groups on Flexibility (C) would seem to the writers to bear on the point of this thesis, and warrant saying tentatively that character is affected in the power of changing individual response to differing environments adequately and quickly by differences in the personal influence situation. This effect produced seems to be negative in the environment of institutional children and positive in the closer personal relationship of home-school life.

The implications from the figures that showed a 119 per cent difference in median scores of Speed of Decision(D) seem, first, that the factor of personal influence represented by institutional life, affects child character in the power to make a decision quickly about his own make-up (either to decide he does or does not know what the word means), and second, that the effect seemed here to be that the child subjected in a larger degree to group life is

less acquainted with himself, that the individual responsibility to guard himself is lessened to the extent of producing more or less confusion when he is left to himself to decide. It may mean that it is his habit to lose himself in the crowd.

A tentative statement is also ventured on the implication from the finding of a 22 per cent higher score on the non-compliance test made by the institutional group. This effect, lower in amount than all others for which differences are given, seems to be negative for closer personal influence and positive for the institutional type of influence. That is to say that children subjected to a greater number of personal influences every day develop more ability to resist a compliance with the demands or notions of others when there is no compliance of their reasoning power. Less docility of character, in other words, seems to have been produced by a lack of close personal relation in its effect upon the organization of native abilities. This non-compliance would mean that the study shows that institutional life would not produce greater diplomacy and courteous adaptability. This finding was not in accord with subjective studies and observations of institutional life. The manifold personal influences as found in institutions had appeared to leave the individuals observed with less urge or power to choose or will, to stand on their own convictions, and greater docility or yielding power. In this connection, it may be here ensidered as to whether the higher score found is a result of apathetic attitude toward adaptability in reaction to the test, which seems quite an easy possibility as a result of the conditions of the test. Since the child could refuse to consider the true-false test again because he thought it all true, or, because he did not care to be bothered over what he, as an individual was able to do on the test, together with the fact that he could not know the group's reaction, the task made little appeal, and by making few changes, he could score high as a non-complying individual—one not very "docile".

That institutional children showed a 56 per cent lower median score on the power to inhibit motor impulses (I) strengthens the writers' conviction that child character is influenced in its development by a difference in the degree of closeness of personal relationships. The group was 56 per cent less able to hold back an impulse to move, to act, and control impulsiveness. In other words, self-mastery, at least in a motor sense, was 56 per cent lower in the institutional group. The organization called character was not by 56 per cent as strong at inhibiting an impulse to move as that

of children whose daily life had been one of closer personal influence. This finding presents the question as to whether the test really measures a will element or an innate general energy element of character.

The significance of the fact that institutional children showed a 39 per cent higher power to score on the test of Volitional Perseveration (L) may be stated tentatively as follows: The effect of institutional life representing a manifold personal influence as a factor in development of volitional perseveration in child character, was shown in this study to be a positive one, in that children subjected to institutional life were shown to be more powerful in "psychic momentum", or power to keep on working (as differentiated from an innate ability to quit working).

This finding was not in according with observations of previous cases subjectively judged. Observations of individual cases would lead one to expect that subjecting children to excessive social experience rendered them weaker in persistence of individual effort, unless group sanction was made the subject of frequent reference. That is, individuality of purpose was less evident in the personality. This may raise the question as to whether this test does, as Dr. Downey is inclined to think, reveal a tendency toward self-directed activity motivated by an inner rather than outer compulsion. It may mean that volitional power, on the other hand, is not influenced by the personal-influence variable as arranged for in this study.

An experiment which is now gaining the widespread attention of those in charge of orphanages is the segregation of the children into smaller units—the so-called "cottage or home plan". The belief has been current, although not substantiated as yet, that orphanage children would receive greater parental care, and be allowed greater individual expression if they were placed in smaller units where at least an attempt would be made to approximate the home atmosphere. Among the problems involved is the question of the nature and amount of parental care necessary to the preparation of boys and girls for the duties of life. Does institutional life tend to make for too much homogeneity of thought and feeling? In short, does institutional life tend to impede freedom of thought and action? Questions such as these can not be answered from a study of will-temperament alone, but the method employed here might be used in the measurement of other traits.

It is very probable that other traits would be as much, if not more directly influenced than the traits of the Downey tests. It

was the writers' experience in scoring the Haggerty Intelligence Examination, Delta 2, to make the observation that in one particular orphanage, all the children (more than 200) in answer to the question: "Are all children's dresses blue? gave a positive answer. The children were dressed in the same kinds of uniforms, were dominated by officials who were rigid in their supervision of all the activities of the children. The discipline and supervision varied widely in the homes investigated. In some the discipline was rigid and iron-clad; in others the normal expression of the personality was encouraged. Investigations of the emotional, moral, and social reactions would aid greatly in solving questions relating to the best methods of rearing and supervising dependent children.

# THE PROBLEM OF *THE LOCOMOTIVE-GOD*[1]

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## THE PHOBIA AND ITS PRESENTATION

*"What is it like (you ask perplexed), this fear? . . .*
*Fancy yourself compelled to walk a plank*
*From cliff to lofty cliff with reeling shank;*
*Fancy yourself entangled in the dank*
*Morasses, with the elephants that sank,*
*As sole companions, save the moon's half-sphere . . .*
*'Tis like such times. The safe bright world of tree*
*And dell and house is round me where I roam,*
*But so estranged, through what's estranged in me,*
*That it seems horribly no more my home. . . .*
*In mood, the lost, the panic-stricken child;*
*In intellect, the man, from joy exiled."*[2]

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[1] William Ellery Leonard, *The Locomotive-God*, 434 pp. The Century Company, New York and London, 1927.

In subsequent notes, this work and other writings of Leonard's will be referred to by abbreviations as follows:

*A. & H., Aesop and Hyssop* (Open Court, 1912).

autob., a typed autobiography in two volumes, written in 1920; mentioned in *L.-G.*, 320. (The two copies of this document are in the possession of Mr. Leonard and W. S. Taylor respectively.)

*L.-G., The Locomotive-God* (Century, 1927).

*S. E., A Son of Earth* (Viking, 1928).

*Two Lives* (Not abbreviated—Huebsch, 1922).

Thus in his long poem, *Two Lives,* Mr. Leonard has indicated the phobia that is his problem. In *The Locomotive-God,*[1] which appears as a psychological sequel to *Two Lives,* he considers this phobia in detail.

Since 1911, when he had an emotional breakdown which left him with a whole brood of phobias for a time, Mr. Leonard has been unable (with some exceptions especially in the years 1914–1920) to go more than a few blocks from his home; beyond that distance he is thrown back by fear. And the fear that so restricts his own freedom of movement, strangely enough, really imprisons his wife, as she is required to stay in or very near the home at all times as a "center of safety" for him (except when she goes along on his limited walks). The symptoms of this overmastering fear,[3] its onset, the apparent causes, the therapeutic efforts, various interpretations and comments, with further material on the personal history of the author, constitute the theme of *The Locomotive-God:* a work which, in the opinion of the present writers, is an important contribution to the literature of psychology. The book seems noteworthy, as an extraordinary picture of the development of an artist and scholar,[4] and more especially, as probably the most complete effort to trace the genesis of a phobia and the richest introspective account of the methods of psychotherapy ever published. In addition, the book offers many pertinent observations, suggestions, and questions for the psychologist. (Unfortunately, it lacks an index.)

From the outset Mr. Leonard has urged the writers to present any facts gained through personal study of his case,[5] along with

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*V. M., The Vaunt of Man* (Huebsch, 1912).

Letters and notes (dated, *i.e.,* clinical notes) are in W. S. Taylor's file.

[2] William Ellery Leonard, *Two Lives,* 97; copyright, 1922, by B. W. Huebsch, Inc., New York. Cf. also *S. E.,* 136–140, 215.

These descriptions bear particularly on such portions of *L.-G.* (see preceding note) as pp. 239, 280 ff., 320–323, 349, 421–422.

[3] The variety of phobias in 1911 is indicated in *L.-G.,* 317–318. Additional data are provided in clinical notes (hereinafter referred to as notes), May 5, July 7, 30, 1923; and in Leonard's autob., 110–116, 122–131, 191, 2:61. The operation of the imprisonment pattern is also described in autob., 169, 192. For an introspective account of the nature of phobias in general, cf. *L.-G.,* 320–323, 349; and preceding note.

[4] Cf. *Who's Who;* and Professor Gordon W. Allport's article in this JOURNAL, 24: 14–27 (1929).

A supplementary publication on Leonard's life is his volume of collected poems, *A Son of Earth,* which he describes as an autobiographic " 'poem-sequence' . . . with reference to activities, aims, situations, influences (nature, personalities, books), crises, and impact of public events" (*S. E.,* vii).

[5] Cf. *L.-G.,* 391 ff., which refers to our work with Leonard from November, 1922, to August, 1923, which was resumed during a week in December, and again through July and August, 1924.

any discussion and interpretations, all with his complete approval and non-censorship. To this attitude, and to the great amount of time and care Mr. Leonard spent on all the records he has placed at our disposal, this study is largely indebted. "You need not consider me in what you write at all", he insists. "Never mind sending, before or later, the review for me to read. I want you to be perfectly free."[6] It may be thought that "a hundred years" ought to elapse before attempting to appraise, like a work of art, the psychological status of this man's phobia. The phobia is, however, a present reality whose behavior seems significant for present-day discussions in abnormal psychology. For this reason (and some others to be mentioned), our subject has voluntarily explicated himself through his book, as a "case"; and we add what we can here.

### *THE LOCOMOTIVE-GOD;* WITH FURTHER DATA

Very striking, in *The Locomotive-God,* is the tracing of the phobic pattern back through terrific adult experiences, including Leonard's first wife's suicide (1911), with extreme social obloquy following, back through the stresses of youth, into meticulously uncovered traumata of early childhood. These earliest traumata include especially the on-rushing locomotive, which the child (aged two years and four months), took to be "God" come to avenge. This whole account is the more effective through the fact that in the telling the author has reversed the general order of discovery to present clearly his phobic picture as a historical sequence, a development from *The Locomotive-God.*[7] And the fact that the development persists, that the phobia continues after all efforts to resolve it, is left as the crucial problem, the problem which will be the especial concern of the present paper.

But there are a number of other points that should be mentioned about the material as a contribution to psychological literature. First with regard to the general question of veridicality of psychoanalytic memories, we note that the question is suggested especially by the apparent origin of this investigation. The search for the principal early traumata here was initiated partly by *a priori* psychological considerations, partly by a little relevant memory, in part by the discovery that the traumatic memory first investigated (a school experience that occurred about the middle

[6] Letters, Apr. 8, 1925, and July 10, 1928; also Feb. 12, 1923 (a bequest of psychological notes).

[7] *L.-G.*, 4.

of his tenth year) itself embodied a ripe phobic pattern, and primarily, with respect to the locomotive scare, by an entry in his mother's diary.[8] Especially interesting, therefore, are the verifications for the accuracy of a large number of these early memories.[9] (Incidentally, Leonard reports memories which date from the age of two years and three months; though how he concludes—despite his surprising evidence—that "the mind forgets nothing", that birth is perhaps a significant experience, and that the child instinctively knows of death, is not so clear.[10]) True, practically all of the memories thus verified refer to geographic or physical situations; for the historicalness of most "memories" of emotional and interpretative reactions, as well as of what many people said and did, we have only the patient's "introspective test" of the validity of his recall. This "introspective test", however, he maintains one can rely upon absolutely, when one has really learned to distinguish between imagined experiences, memories of being told of experiences, and memories of the experiences themselves.[11]

A point in this connection is the relative size of the child's [*traumatic?*] imagery as recalled by the man: the man sees (in memory) a watch-face as big as the face on a clock-tower, or meets (in memory) a giant policeman ten feet tall, or a woman eighteen feet tall ("my young mother as I looked up to her at two and a half. . . . So too our puzzling dreams of enormously magnified objects are but the memories of the child . . . .").[12] This proportionate imagery is significant as evidence for the statement that the memories [*thus procured*] "are not memories in the ordinary sense: the mind doesn't *remember* its childhood experience; it re-lives that experience in all its immediacy".[13]

It is also interesting to find in *The Locomotive-God* considerable verification for a number of ideas current in abnormal psychology. Transient emotions, pains, hallucinations, at first meaningless, often turn out to be the symptoms that precede or accompany some significant recall.[14] After the recall has taken

[8] Letter, Feb. 15, 1924; and *L.-G.*, 61, 69.

[9] *L.-G.*, 16, 37, 45, 71, 74, 79 (referring to a check by one of the writers). Certain later memories also receive verification. Cf. pp. 432–433.

[10] *L.-G.*, 287, 422, 22, 11, 14.

[11] *L.-G.*, 47, 412, 399, 61, 331, 79–80, 403–406, 422–423, 56, 44, 396–400, 431–434; and a note, Apr. 4, 1925.

[12] *L.-G.*, 6, 7; and an "image" reported in an earlier stage of recalling the whole story.

[13] *L.-G.*, 5, 407–408.

[14] *Ibid.*, 250, 392, 398 ff.; and notes, Mar. 27, Apr. 8, 1925.
The following illustration of the (as yet) meaningless sort of intercurrent symptom

place, it is easy to show that the mechanisms of many waking emotional stirrings, pains,[15] hallucinations,[16] and even hypnagogic twitchings,[17] as all these had been occurring without conscious cause and previous to psychoanalytic efforts, are all to be found in experiential antecedents now subconscious. Many readers too will see in various passages corroboration of the rôle of childhood "eroticism".[18] Certainly fatigue, emotion, disease, alcohol, and similarity of new stimulating situations to old phobic situations, seem well demonstrated here as fixatives for abnormal reactions.[19] The process of repression, also, is somewhat illuminated in this study,[20] with verification of the usual "period of meditation" or "incubation",[21] that so parodies the types of subconscious cerebration often remarked in normal life.[22] In general, there is

may be added from our notes: "Occasionally in 'twilight conditions' where attention is concentrated on *nothing*, the subject has sudden dream states which are moments of terrific wrath, states of fury—cause unknown.

"Compare the fact that he sometimes had brain-storms of fury on getting up in the morning, off and on in the past two years" (an entry of June 25, 1924).

See the discussion of "Stages of Analytic Recall", below.

15 *L.-G.*, 250, for example; and the following note from the subject when he was working alone:

"The center of the trouble seems to have been this: the instant of supreme shock when locomotive overwhelmed me, instantaneously accompanied by supreme horror of isolation from mother and by violent bodily spasm—catch in throat, chest, etc.

"N.B. Even in writing this I'm *much agitated—without* ANY MEMORY of the instant" (June 5, 1924).

16 *L.-G.*, 250, 251, 302, 303, 305, 306, 326, 392, 394, 397 ff., 404, 433, 434, 400.

17 *Ibid.*, pp. 277–278.

18 *Ibid.*, pp. 8–16, 29–31, etc. Incidentally, the author discusses the problem of sex development, on pp. 98–111, 151. Apropos of his own youthful embarrassment at obscene talk, he elsewhere remarks: "Fond parents, school-mistresses, and clergymen would have said it was the virgin purity of a sweet lad. And they would have been as wrong as they usually are in interpreting adolescence. The embarrassment was mere overconsciousness of sex as this alien, secret thing. The capacity to talk or jest normally on sex—as on any other phase of life and nature—is oftener a sign of healthy-mindedness than this shrinking and squeamishness. This certainly holds of the period *after* adolescence. A mature man who *blushes* at a 'coarse' joke, for instance, is not healthy minded, but overconscious of sex which is still unassimilated to the rest of experience; a *disgust* with mere vulgarity is a different matter, a matter of intelligence and refinement. However, I believe that the shameless overflow of sex instincts in amateur drawings in privies and in smutty talk and rhymes with other dirty little brats is less baneful for adolescence than the ashamed discomforts and the perpetual suppressions in 'good' boys like myself. The latter sort may make less trouble for society—but even this may be disputed, if we enlarge the term society to include more than the relations of the two sexes" (Autob., 27).

19 *L.-G.*, 238, 279, 280, 299 ff., 365, 396, 406.

20 Thus related memories "go out" together (p. 45); and "each new scare would, by deflecting attention from the preceding shocks and so preventing dwelling upon and reintegrating them, tend to repress all the preceding shocks.

"Thus the policeman incident [a later fright] repressed all that went before,—except the memory of the school itself. And why not the school? Because the policeman reminded him of the school" (note, Aug. 21, 1923).

21 *L.-G.*, 367.

22 *Ibid.*, 335–336, 338–339. Cf. also 416.

abundant demonstration of the rôle of meaning (Prince) in such cases.[23] As applied to the question of dreams, this means that critical care and open-mindedness are necessary in analyzing them.[24] Incidentally, by no means all dreams are found to be wish-fulfilments.[25]

A number of lesser observations in connection with this case may be noted, some of them from further sources than the pages of *The Locomotive-God*. In a typed autobiography (1920) the subject wrote: "If I'm between dread of phobic fear of my wife's being down-cast and taking poison and the fear of going down-town with her (which may have made her down-cast) the one drives out the other, whichever is stronger—usually it would mean I could go down-town with less fear than usual, because it was the *means of escape* from the other fear (on the whole, the more dreaded)."[26] Thus one way of controlling a fear temporarily, at least, is by means of a greater fear. Another way, especially in regard to a phobia, is to bury one's self in an absorbing activity.[27] Rest and exercise are helpful of course.[28] Flattering reviews of publications,[29] any kindness from men and women,[30] pleasant home conditions,[31] "tender emotion", romantic love in itself,[32] in general any joy as opposed to any depression,[33] and especially—in the long run—every achievement over the phobia itself,[34] all appear to be factors helpful, for a time,[35] against the fear. The subject added (in 1920) that writing down his mere phobic reactions seems to make them worse, "whereas often to *tell* another by direct conversation seems to lessen my tension . . . particularly in a phobic crisis".[36] The writing of *The Locomotive-God* (1926), however, which of course is an analytic

[23] Pp. 24, 27–28, 34, 50, 61, etc.
[24] Pp. 388–389.
[25] *Ibid.*, 35, 389, 400–401; and autob., 145 *circa*, 2:46 *ff.*
[26] Autob., 157.
[27] *L.-G.*, 312, 332, 333; "Intellectual activity [in 1911] was my salvation—and *did not add to the nervous exhaustion:* that is a strange, but, I think, a scientifically correct analysis" (autob. 115). Cf. Notes 54, 88, and 172, *infra.*
"The phobic need of being able to write when in a panic (to relieve tension and divert) goes back to the same act—for same reason—in class-room" (note, June 27, 1923).
[28] *L.-G.*, 324.
[29] Note, July 30, 1923.
[30] Autob., 2:39.
[31] *Loc. cit.*
[32] Notes, Apr. 22, Sept. 1, 1923; and autob., 2:34.
[33] Autob., 176.
[34] Autob., 186.
[35] *L.-G.*, 419.
[36] Autob., 115–116, 108–109.

rather than a merely symptomatic report, has not made any difference in the phobic condition.[37] Quite striking, in this connection, is an earlier observation (1920) that whenever adjustment to objective conditions is *absolutely necessary*, the adjustment comes to be made or at least approximated.[38]

Naturally many personal traits of the author are revealed as indicators of his emotional history. Homesickness, for example, has been with him "a poignant emotion many times".[39] Little phobias, which at one period he thought must be "buddings" from the central fright, have turned out since to be manifestations of associated frights or at least phobically associated items.[40] In the process of "placing" a trowel which was met with in the analysis, Leonard observed that at his present home now he has a trowel which he is *always mislaying, losing;* he often loses things in this way.[41] He reports, with similar historical explanation, a number of phenomena of "regression". For example,

[37] *L.-G.*, 411.

[38] "In any phobic state where there is *no* possibility of relief by changing or influencing the *objective* conditions, the mind eventually seems more able to adjust itself from *within;* but the *tendency* is distinctly to grasp for help by attempting to change the objective conditions, *where this is possible*, rather than to seek help within. For instance, in the phobia of darkness, there was nothing to be done with the external conditions; the night would come round regularly; hence the mind was *compelled* to make the best of it, to endure, and to adjust. In such a situation the phobia seems to say, 'Well, I'll have to give up at last.' Or again, once I got some psychic support, in addition to the psychic dependence on my parents, from the presence of a neighbor. Along in early August he decided to go to Europe, and I dreaded to have him go—he had so helped to make me feel less psychically insecure in my environment (as well as being a companionable person). But of course I had no jurisdiction over his movements; I was *compelled* to adjust myself from *within*, and did so in a few days, the psychic need disappearing altogether. On the other hand, had he been my father or other close relative I *could not* have controlled the panicky urge to beg him not to go and would thus have perpetuated and *developed* the particular need. So it has gone with my wife. If at the start of our marriage I had not known she would stay near when I felt the psychic dependence, I might have gotten over it at the start. But the conviction must be overwhelming that there is no *possibility* of my modifying the external. If my wife should merely *rebel*, refuse to yield to my psychic need—if in short there developed a *conflict* of wills (instead of the previously analyzed situation where there is a *compulsory resignation of will* before an order of things that my will has absolutely no bearing upon), the good would not result, but on the contrary the panic would reach a most distressing and serious state. Wherever the phobia recognizes an *inexorable hopelessness* of a situation—the impossibility of my getting relief from changing external conditions—wherever, in other words, it sees I am reduced to *finding a center of safety in a reconstituted self*, it finally gives up" (autob., 193–195).

[39] This homesickness, he continues, "is analogous in emotional tone and in idea (intellectual content), to the great sinking of the heart I have felt at times over some element or moments in the 'irrevocable' past of my life. It is the yearning for that part of the self that is absent, except that the yearning of home-sickness is not so desperate, as it contains an element of relief in possible return, whereas 'past-sickness' knows the past is indeed irrevocable and the cure is in facing round to the present and the future" (autob., 178–179).

[40] Note, June 27, 1923; and *L.-G.*, 279, 383, 386–387.

[41] Note, Aug. 19, 1923.

after his breakdown in 1911 he began wearing bow ties, which he had not worn since childhood; and he has worn them ever since.[42] He suggests indeed that many little "fads", and many ideas which are called "superstitions", are based on complexes. Thus, he says, "an intelligent lady begged me not to go under a ladder against the wall of her house, saying that she knew it was foolish, but the idea made her uncomfortable. Analysis showed us both it was phobic, not a real *belief* (superstition)."[43] During a time when the memory of a cigar seemed about ready to "come out" into consciousness (as it did eventually), our subject was heard to tell the *same* joke on *several different occasions* to the same people (the writers): "I'm preparing for that Burns seminar by smoking Robert Burns cigars." For this jest the subconscious rationale became apparent as the analysis of the phobia proceeded.[44] Undoubtedly a number of the man's interests have been motivated similarly.[45]

An especial point, and one that we do not know to have been made explicit in the literature elsewhere, is the observation that traumatic "repressions", such as fear complexes, have sometimes been *followed by marked interest in those very topics* (without the particular memories): as though the organism were seeking to inhibit its fear through a show of interest, while really trying to work out the adjustment it had failed to make before. Thus in the early years after the great fright, Leonard notes, "I developed no specialized fear of locomotives or of God. On the contrary, trains became a childish passion and God a more than ordinary childish speculation." In his young manhood, his chief delight "was the feel of freedom and inward security, even to seeking and creating situations for the more poignant thrill" of freedom, such as mountain climbing.[46] Sometimes these compensatory efforts would be manifested in symbolic form, or through fantasy. Certain fantasies, indeed, can be recognized as subconsciously motivated efforts toward adjustment.[47] Such fantasies are therefore "wish fulfilments" in a double sense. Of Leonard's art, this statement is even more true, as through that art (the poems especially) there are revealed both the author's imaginary satis-

[42] *L.-G.*, 332, 29, 52, 372, opp. 388; and note, June 23, 1923.
[43] Note, Feb. 17, 1923.
[44] Cf. *L.-G.*, 11, 182, 301, 303, 14, 313–314.
[45] *Op. cit.*, 315.
[46] *L.-G.*, 24, 36, 202, 203, 211–216, 331, 333, 412.
[47] *Ibid.*, 412–413.

factions and his imaginative strivings, along with many a picturesque emergence from phobic antecedents.[48]

This part of the picture reminds us of Stekel's dictum that "every neurotic has the gift of living in a 'second' world"; and that "between dream and poetry there is essentially no difference" as far as psychological mechanisms are concerned.[49] The only noticeable difference, according to his view, is that a conflict which is "too ripe" for releasing through dreams alone (as in a normal person), but which also has not become pathological, finds its way out in a work of art.[50] All artistic creation is thus "the freeing of bursting energies, the discharge of repressed complexes"; and "every poem is a confession".[51] As Freud sees it, "a strong actual occurrence awakens in the poet the memory of an earlier occurrence which mostly pertains to his childhood, and from which now the wish starts, which works out its satisfaction in the poem".[52] Naturally these poems, resembling fantasies, include aspects of the past, present, and future.[53] Stekel adds that "the composing of a poem is properly a process of healing through auto-analysis".[54]

From such a view it would seem to follow, as Stekel insists, that if all that is neurotic were dissipated (through the settlement of all conflicts), there would be no poets. "Not every neurotic is a poet; but every poet is a neurotic." True, Stekel "would not stamp all poets as 'sick' men", since in his view we are all a little neurotic. "The poets are not degenerated" in Nordau's

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[48] *Ibid.*, 419–421. Cf., in this connection, the manner in which *Two Lives* was composed: *L.-G.*, 338–339. Note also the author's thought of a book on this subject: p. 419.

[49] Wilhelm Stekel, "Dichtung und Neurose," *Grenzfragen des Nerven und Seelenlebens*, Zehnter Band, Heft 65, S. 3, 2, 3 (1909). This article also appears in a translation by James S. VanTeslaar in *Psychoan. Rev.*, 10:73 ff. (1924).

[50] *Op. cit.*, 5.

[51] *Id.*, 7.

[52] Sigmund Freud, "Der Dichter und das Phantasieren," *Sammlung kleiner Schriftung zur Neurosenlehre*, Zweite Folge [aus *Neue Revue*, 1 Jahrg. (1908)], 205 (1909).

[53] *Id.*, 201. Cf. Leonard's observation that the poet revives his childhood's clear vision with his childhood perceptions generally (*L.-G.*, 4–5, 10).

[54] Stekel, *loc. cit.*, 12. Cf. similarly 69, 70; also Tennyson's mention of "verse that brings myself relief" ("In Memoriam", LXXIV); and these lines of Leonard's:

> ". . . The form my message takes
> Grows not from mode but from my nature's need,
> And what most haunts and hounds the artist makes
> That artist's theme—though lip and tongue should bleed. . . ."

(*S. E.*, 136). Cf. further *A. & H.*, v, 149–150, 157–158; *V. M.*, 7; *S. E.*, 91; *L.-G.*, 139; and Note 88, *infra*.

These passages in Leonard's writings deserve to be contrasted or compared with his contribution to the present discussion, in the second paragraph in the text following.

sense, either. "They are neurotics whose neurosis is a consequence of a higher culture-life."[55]

To examine this great cultural issue, with Stekel's generalization that "not only the poet, but all other creative artists, prophets, philosophers, and inventors alike, are neurotics", that "neurosis is the source of all progression",[56] is beyond our present discussion. Significant for our problem, however, is Leonard's reaction to this whole view of the nature of poetic creation. We find it in several places, such as pencilled on the margin of a copy of Cary F. Jacob's article, "The Psychology of Poetic Talent".[57] Mr. Jacob had stated that "because the artist is usually by temperament unfitted to enjoy even a tolerable degree of satisfaction in the world as it exists, he is forced to create through his imagination an environment suited to him, an environment in which he can find, if not contentment, at least a normal mode of release for his energies".[58] To which our subject replies: "This holds only of a certain type—the type that is dissatisfied to the point of rejection: another type abounds in and through reality, takes reality to himself, clasps, loves, interprets the life of reality. . . . [It is] a mistake to assume that art-expression is a substitute, a surrogate, for other modes of expression—it is the artist's aboriginal mode. . . . [In this article, Mr. Jacob] failed to note the basic, general, human insights of the poet (as distinct from special concepts of an age), [and] he failed to note his function as giving *new life* to common experience and to old ideas."[59]

"But there does remain a connection", Leonard adds in *The Locomotive-God:* "a sensitive, imaginative, emotional organization is the prerequisite for becoming either half a poet or a good phobiac. . . . Possibly too the poet and the phobiac are similar in having a similar relation between consciousness and subconsciousness. In each the subconscious tubes into the consciousness may be more numerous and more open. . . . Yet something more than numerous open tubes is implied too: the subconsciousness itself must be a rich ferment of good things with energy to make them bubble upward."[60]

[55] Stekel, 70, 5, 72, 8. Cf. similarly F. C. Prescott, *The Poetic Mind*, 260 ff. (Macmillan); and Paul A. Witty and Harvey C. Lehman, this JOURNAL, 24:77–90 (1929).

[56] *Psychoan. Rev.*, 11:59 (1924).

[57] This JOURNAL, 17:231–253 (1922).

[58] *Loc. cit.*, 245.

[59] Margins, 245, 248, 253.

[60] *L.-G.*, 219–220. On this point of sensitive organization—discussed especially in

Our sketch would not be complete without a word about the social psychology which is indicated in connection with Leonard's disorder. (The connection is especially close since a very active element in his phobia is a fear of the mob.[61]) Naturally the fact that Leonard often passed friends in phobic abstraction, and that he had to decline many invitations, led them to regard him as a snob.[62] "One is asked to go on an automobile ride—and makes up an excuse, not always convincing. One doesn't call—and makes up an excuse, likewise perhaps unconvincing. Excuses and pretexts become habitual. One hesitates to give the real reason—for it would seem crazier than the excuses themselves. One does odd things. I carried a cane for a time—because it seemed to give me psychic support—this was foppish and queer. I avoided being in my office at hours when the corridors were crowded—I had a secret horror of crowds—and that led to students thinking me queer because I didn't seem to want to confer with them. I dreaded to teach (at times) with the door closed—and it was queer that I kept opening the door. I was (I am) always put to it to fake some plausible explanation or situation to relieve me. Once the department was holding a meeting in a university classroom, when I observed the door was locked. This produced an uncontrollable panic. So I faked a fit of coughing, went to the door, unlocked it, and passed out, to return in a moment."[63]

Naturally too these various "queernesses" gave rise to adverse social interpretations of his attitude toward his parents,[64] toward his second wife,[65] and toward persons who were not related to him. "In countless ways", as Leonard observes, "the phobiac lives in a peculiar universe, according to laws abnormal to others; yet he is compelled to live with these others, in so far as he can according to their laws which are so often abnormal to him. He must expect to be misunderstood, and must have the balance of mind and the character to make the decisions that alone permit him to live at all." Having "often noted a curious instantaneous subsidence of phobic tension and sadness in the presence of friendly young womanhood", he says, "[I] knew perfectly well that in *social* regards (as to my reputation) . . . [my cultiva-

W. S. Taylor's *Readings in Abnormal Psychology, etc.*, 646–652 (Appleton, 1926)—cf. Leonard's interesting analysis of "over-reaction": *L.-G.*, 176.

61 *L.-G.*, 14, 63, 297, 305, 318, 327, 329.

62 Note, undated, and Jan. 13, 1925; and autob., 120–121, 138.

63 Autob., 138.

64 *L.-G.*, 344, 357.

65 *Ibid.*, 347, 352, 364, 367.

of the companionship of a young girl] was becoming an indiscretion; but I knew too how vitally tonic in personal regards (as to my health) her companionship was; and I deliberately made one of those choices that I have often made in these phobic years, choices which have inevitably exposed me to grievous misunderstandings. I felt I had to use *every* instrumentality to get well that did not sacrifice any one else; and chose my health in preference to my reputation."[66]

People's attitudes, of course, differed with respect to both the phobia and the phobiac—and they still differ, as we shall see. Some were sympathetic, some understood from similar experiences, some were kindly reserved in their judgment, some were misunderstanding, and some felt they understood so well that they could force matters for therapy, or could blame the patient for the whole situation.[67] As the more unfavorable of these attitudes were themselves phobically weighted for the patient, the net result often was that he was subjected to the wear and tear of added phobic attacks.[68] His position was made more difficult through the fact that "the university teacher works in the open before all eyes . . . before both gown and town. . . . And a bad reputation spreads faster than a good."[69] It is not surprising, especially in view of the circumstances of his first wife's death and the social setting during this period,[70] that the worst possible rumors became current about Leonard.

A "co-ed", skating on the Wisconsin lower campus, happened to notice our subject not far away. "There is the professor who killed his wife", she remarked casually to a girl visitor. "Believe me, I took a real good look at him", this visitor told one of the writers, several years later when she was the wife of a colleague in an institution 1200 miles from Wisconsin. One of the writers also found that as late as 1924 (at least), some persons among those *nearest* to *Leonard*, believed that the first Mrs. Leonard's woman physician-confidante had *seen*, upon her dead body, the marks of Leonard's brutal violence. Inasmuch as the most searching exploration of Leonard's own memories failed to discover any basis for this notion, and inasmuch as frank inquiry of the physi-

[66] Autob., 120; *L.-G.*, 345; and autob., *ibid.*

[67] Autob., 101–102, 126–132, 137, 139, 159, 170, 179; and *L.-G.*, 293–313, 316–319, 327–329, 334, 337, 344, 349, 351, 352, 357, 363–369, 374, 417, 434 ff.; *A. & H.*, 125, 147, 148, 149, 153.

[68] *L.-G.*, 295, 318, 328–329, 337, 357, 363–367; *S. E.*, 134; and autob., 122, 201.

[69] *L.-G.*, 337.

[70] *Two Lives*, 59–68, 71; and *L.-G.*, 264–294.

cian herself (also of an understanding roomer in the house at the time) completely disproved the tale,[71] the writers, with their further knowledge of individual and social factors involved, are disposed to accept Leonard's own analysis of the genesis of these horrible rumors as essentially correct:[72] to his list of causes for the development of the rumors, the writers would add only (1) the impression of overbearing egotism which Leonard often gives in conversation, (2) the presence of peculiarly soured individuals in the immediate connection, and possibly (3) something of the usual "projection" mechanism on the part of those who furthered the rumors.[73]

In all objectivity, a great part of the psychological atmosphere in which this man, however much in error himself, had to live, and its corroding effects upon him, can perhaps be imagined; but he has described it well. "From the day of her death, all her kindred

[71] These facts are mentioned in *L.-G.*, 286. Cf. Note 170, *infra*.

Leonard's attitude toward these findings is expressed in the following statement: "I'm glad you have this vindication of your patient, even though it takes away one possible means of cure". (We had thought that perhaps some forgotten cruelty to the wife might have been repressed, with the result that the present phobia survived, motivated by remorse; and that the remorse, once recognized, might make way for a cure. Leonard concurred in this possibility.—He continues:) "The fact is, a more dastardly set of lies were never concocted—or rather a ranker growth of mere irresponsible gossip and blind rage never sprang up—at least in my experience. Truth will prevail, as the saying goes—but usually so late that it makes little difference whether it prevail or not" (a note, Aug. 12, 1924).

[72] *L.-G.*, 284–293, 316. Cf. letter, Aug. 25, 1928.

Incidentally, it was our original intention to study Leonard's case *in abstracto*, in individual isolation, without any reference to the social situation in which his trouble had its setting. This intention, of course, implied real limitation upon our therapeutic efforts; but we felt, and Leonard concurred willingly, that our other connections in the community required this limitation. It was only after our detachment from the community that, as a last effort toward a cure, we went into the social factors as thoroughly as seemed practicable.

[73] To the factor of egotism, we shall return shortly.

The second point, that of soured individuals, may be illustrated as follows: The writer who had established the emptiness of the story about the woman physician had occasion to report his findings to two (of those few) persons among Leonard's closer associates who had really believed the legend of the marks on the dead wife's body. As the physician's actual report was presented, one of the two listeners was evidently relieved, encouraged, and more kindly disposed toward our subject. The other listener was obviously puzzled, but silenced, if not convinced. The next day, as it turned out, the same topic was referred to again with these same two persons. The one met it with the changed attitude; the other, who illustrates well the little category of peculiar persons referred to, was observed by the astonished investigator to respond with the *very same attitude, with the very same words*, that had been given before the evidence was obtained: "But you know, her own doctor *saw* those bruises"! It seemed that the report of the day before had literally *meant nothing* to this individual—and for reasons which seemed (to the investigator) to be psychologically far more apparent than were the motives (as judged by this individual) for Leonard's abnormal reactions.

On "projection", the selections and references in Kimball Young, *Source Book for Social Psychology*, 473, 647 ff. (Knopf, 1927), and in W. S. Taylor, *Readings*, 615–619, may be consulted.

and their group discarded me, and I realized I had enemies indeed." ("After three years I forced myself finally into the cemetery and sought out her grave. The family had erected a monument which bore only her maiden name; and of course had never consulted me or my wishes in any way. . . . I have since made it a secret practice to lay flowers on her grave on each anniversary of her marriage.")[74] "For many months I never knew who was going to speak to me and who not."[75] There was thus the "nervous strain of meeting face-to-face on street or at public and private gatherings those men and women (and the women significantly outnumbered the men) who now cut me dead (and with brutal ostentation)". However, "I have been struck profoundly by the perspicacity with which (as I now know) many people penetrated the facts behind the whirl of foul gossip". Yet "I do not believe that it is alone my own experience that convinces me that the credulity, brutality, and cowardice in human nature achieve their completest expression in mob-slander. These notes of mine may some time serve the sociologist".[76]

### THE INDIVIDUAL

For any effort to understand this case as a problem in psychopathology, pertinent questions are, what was the motivation for writing this volume? And what sort of personality lies behind the writing?

Part of the answer to the first question, that of motivation, is so bound up with the problem of interpretation of the whole neurosis, that for the moment we shall note only the author's account of his reasons for writing the book. After certain correspondence with us indicating that he was skeptical and discouraged as to the outcome of his case, and spontaneously expressing complete inability to write up what he felt sure was material of psychological importance,[77] he *did* write *The Locomotive-God:* he wrote it in nine weeks (during seven of which he was carrying a

[74] Autob., 95, 97.

[75] *L.-G.*, 288.

[76] Autob., 101, 102–103; and *L.-G.*, 293–294 (cf. also 418).

[77] "I have not yet followed up your reference with regard to tapping by automatic writing—I have naturally little faith left—scientific skepticism as distinguished, please, from discouragement. (That too in abundance!)" (Letter, Sept. 8, 1925).

"I wish you . . . could come out here next summer. . . . I feel that there is too much that needs to be taken account of—and I *can't* write it—but could discuss and explain. The . . . unusual phenomena have all developed since you left [Aug., 1924]. I have lost all expectation of cure or even improvement—but I'd like to see you for discussion of the scientific data" (Nov. 7, 1925).

full schedule of university teaching), and without a single written memorandum.[78]

Spurred doubtless by the fact that other duties prevented the authors of the present article from presenting Leonard's clinical material as they had planned, he wrote the book, he says, persuaded by various friends, "in spite of the shrinkings of privacy and the demands of an insistent profession".[79] The book was written, as Leonard sees it, for several reasons. (1) "I have been persuaded", he says, "by the desire to frustrate, by a neat and unexpected turn, those demonic forces which, as appearances go, have backed me for so many years against the wall"; in other words, "I wrote this book partly as a last experiment in cure".[80] (2) "Out of very suffering and very failure I would create . . . something . . . to help others to human and humane living": "I have . . . a purpose to make my life count for other men and women . . . toward the deeper and wiser understanding of life itself"; since "I . . . have deepened for my spirit the meaning of 'know thyself' " and through my own mind, "the mind of mankind".[81] Especially, (3) "one purpose of this book is to make normal people . . . safer for the . . . phobiacs";[82] and, with relation to specialists in abnormal psychology, (4) "my findings differ in some ominous particulars from the previous record of poets and psychoanalysts".[83]

This difference, or uniqueness, in his contribution, Leonard feels, centers particularly about the fact that there is a crying need today for psychoanalytic "studies of cases *not cured*. The current picture is unscientific. . . . The biologist tells . . .

[78] A letter to G. W. Allport, Apr. 9, 1928.

[79] *L.-G.*, 4, 3. The typed autobiography (mentioned in *op. cit.*, 320), which was a preliminary study of this same sort, was intended for use only by Leonard's therapists, or, at most, for anonymous circulation among specialists. But the publication of *Two Lives* (likewise as urged by friends), with the widely favorable response which it elicited (*L.-G.*, 418—cf. also regarding the reaction to *L.-G.*, Addenda II (1) in the second edition), seems to have encouraged the author to publish this psychological sequel. Yet when communicating some of his later findings to the present writers, Leonard stated: "My comments on my suffering are usually reserved—I dread to set down the facts—I'm compelling myself to do so" (note, Mar. 29, 1925). However, "I have nothing to conceal about myself; it is only where I will meet with human *unintelligence* that I feel I must conceal things from my fellows" (note, undated).

[80] *L.-G.*, 3–4, 409.

[81] *L.-G.*, 4, 283–284, 3. Again: "I think the chief reason why I want my case on record is the satisfaction (compensation) that this long effort and time (taken from all other enterprises, writing, study, etc.) has not been *wasted*. Another reason—less ego-centric—is of course humanitarian and scientific—the good the case may do" (note, Mar. 27, 1925). Incidentally, "I think all this sort of thing points to a higher type of biography and criticism in the future" (note, undated).

[82] *L.-G.*, 329.

[83] *Op. cit.*, 3.

what has happened in his laboratory for the sake of truth alone, be the results positive or negative; the psychoanalyst is under the (very natural) temptation to tell what has happened in his clinic partly for the sake of his practical career, and so his scientific interest in reporting his negative cases lapses. . . . We hear nothing about the *failures*—which *are* the problems."[84]

The personality of the author of *The Locomotive-God* is of course highly complex. His physical vigor is excellent at fifty.[85] He has a keen sense of humor. The range of his intellectual activities is great, as indicated in *Who's Who*. Through personal acquaintance, we can say that the store of information that he reveals on numerous and varied topics is truly prodigious. Although thus reflective, and, we may add, although adhering to the code of overt sexual morality, throughout his maturity Leonard has presented the picture of a remarkably uninhibited person. Easily aroused by a bit of news or a difference of opinion, or when seriously crossed in any way, he is likely to raise his voice on the street, for example: suggesting—aside from his generally intelligent management of his everyday affairs—quite the conventional picture of "the artistic temperament". (Of course we must allow for the fact that the phobiac "is under a continual nervous strain—*chafing in chains*—so that all things are *over*-irritable".) Leonard's main emotion is fear in various permutations and combinations, sometimes passing over into anger. As he expresses it, "I always feel more profoundly what *threatens* my life or interests than what *preserves* or assists. . . . My higher psychic life is humane and generous, but it is implicated in and thwarted by a vast stir of the sub-rational." Disgust, on the contrary, is not conspicuous in his emotional organization.[86]

With so much of his universe necessarily (because of the confining phobia) in his own mind, so to speak, it is difficult to estimate the extent to which that universe revolves about his ego. He certainly gives the impression of great ego-centricity. Made much of as a child, isolated by circumstances as a youth, always highly ambitious and with a sensitive pride, imaginative, appreciative of artistic as well as heroic values, he finds his case today a very extraordinary one, and one to be recounted and discussed with many persons. For despite his claim that he dislikes to discuss his trouble, the general impression among his friends is that (at

[84] Notes, Mar. 26, Jan. 13, 1925; and *L.-G.*, 410.
[85] *L.-G.*, 332 *passim*; autob., 2.
[86] *A. & E.*; autob., 103, 54 ff., 59, 60, 62, 97; note, Mar. 25, 1925; *L.-G.*, 381 ff., etc.

least until recently) he has resembled the Ancient Mariner in readiness to tell his story. Probably to a greater extent than he realizes, Leonard is still, or again, the youth of whom he wrote in 1920: "After a little I proposed [to the girl]—got a negative—and found myself upset . . . I walked the streets . . . slept fitfully, wrote verses, and talked about the affair incessantly with any fellow-student who would listen or who wouldn't."[87] As Freud has observed, "There is a race of men whom . . . a potent goddess—necessity—has commissioned to say what they suffer and wherein they rejoice. Here are found the nervous, who are required to confess their fantasies to physicians."[88]

It is a commonplace that the neurotic is ego-centric.[89] And Leonard recognizes this fact. "A phobiac *as such*", he observes, "is a supremely selfish, self-centered phenomenon, with self-preservation as an abnormally developed complex". But while this condition "is often enough a genuine neurotic symptom, it is quite as often only the inevitable preoccupation with pain and with the problem of getting rid of it".[90] Naturally such preoccupation predisposes to self-pity. Interesting in this connection is an observation made by Leonard with reference to his recollections of early childhood. "I seem to have two quite contradictory reactions", he says. "(1) There is a strong feeling that the child is the *me* of today—that there is the same personality, . . . *felt* the same as a continuum. . . . (2) On the other hand, this intense preoccupation has brought the little fellow back to me, with all his childish and yet . . . very real universe, and he seems to be my own little son, and my interest in him to be a father's interest; thus in my actual childlessness I catch myself yearning for him, wishing to help him, to spare him the troubles of life. I catch myself almost in tears—and they are not the almost tears of self-pity. Poor little chap, I seem to say—and instead of being *me*, he seems suddenly to be dead and to leave me again childless." But one gets the impression of

[87] Autob., 34–36, 44–46, 54, 58, 197, 2; 107, 121. Cf. similarly *L.-G.*, 48, 99, 103, 119, 138, 139, 168–169, 227, 361, 417, 419, etc.; Note 55, *supra;* and a letter, Aug. 25, 1928.

With respect to the idea of the uniqueness of his neurosis—and perhaps it is unique—he remarks: "We *know* as yet little indeed—that is the upshot of my experience" (letter, June 24, 1928).

[88] Sigmund Freud, "Der Dichter und das Phantasieren", 200. Cf. Tennyson's line, "I do but sing because I must" ("In Memoriam", XXI); and Notes 27, 54, *supra*.

[89] Cf. W. S. Taylor, *Readings*, 652–653; and for illustration, Leonard's *L.-G.*, 346; *A. & H.*, v, 13, 148, 149, 153, 157–158; *S. E.;* and Note 66, *supra*.

[90] Autob., 155; and *L.-G.*, 177. Cf. a letter, Aug. 25, 1928.

more direct self-pity in a few (perhaps surprisingly few—and understandable?) passages.[91]

Closely allied to ego-centricity and self-pity, we know, is that more sinister manifestation of self, egotism. How far our man is an egotist, it is especially difficult for us to say: we are all so defensory, by untutored impulse, when we meet with superiority. Perhaps not even history can decide whether Leonard over-estimates himself when he remarks: "It was hoped by my friends that the great acclaim which the eventual publication of *Two Lives* has brought—this setting me definitely to the fore of all contemporary American poets—and among the few bigger men in the art in the country past or present—might help. But it has not."[92] In fact, for many readers of that poem, this estimate is simple truth—if it is high enough. Leonard shows a sense for reality, indeed, when he observes that he has "a respectable name in two worlds of scholarship; a venerated name in neither".[93] No doubt he loves praise and honor, as is natural to men.[94] The question as to whether he protects his ego from all negative criticism by the mechanism of "projection", we shall have to discuss on a later page.

With respect to personal relationships, we find that in early childhood our subject was greatly attached to his mother. By the time he was twelve, however, her excessive mothering, visiting school, and the like, made him ashamed and angry; her mystical lectures on sex, instead of carrying conviction, aroused his curiosity and distrust; and her repeated reference to what she had suffered for him in bringing him into the world, led him to wonder why he should be indebted for a favor he never requested, and which often seemed not to be a favor at all. From such causes (apparently) there grew up an attitude of estrangement from his mother; an attitude which has since been aggravated by differences in ideals, and by his resentment at what he has regarded as the impractical other-worldliness of his parents which necessitated his aiding them financially for many years. For his father's intellectual honesty and kindly character, on the other hand, our subject's regard increased steadily throughout the years.

[91] *L.-G.*, 295, the verse; and Note 71, *supra*.
The quotation above is from the autob., 2:122.

[92] Letter, Nov. 21, 1925. Cf., on this point of self-estimate, *L.-G.*, 48, 103, 119, 138, 168–169, 227, 417, 419; also *V. M.*, 40, 111.

[93] *L.-G.*, 225. Cf. similarly 338.

[94] Letter, Aug. 25, 1928; autob., 54, 58; *L.-G.*, 117, 119; and Note 145, with its text, *infra*.

Toward the only other child of his parents, a sister who is an economic burden to him and distinctly queer, Leonard has shown small patience and no affection for a long time.[95]

Toward any person who crosses him or threatens him in any way, our subject's reaction naturally tends to be violent, either in fear or in anger or both; as such persons fit into the "attack motif" of his phobia. Thus relatives or friends, when not thought to be friendly, may come in for more or less violent outbursts. By extension, persons whose attitudes diverge from his particular idealistic preferences, such as from scholastic freedom in contrast to academic systematization, or from the principle of regard for individuals in contrast to social smugness, may find themselves the objects of sarcastic (though diverting) literary characterizations. On the other hand, those whose character he admires, and those who constantly try to understand him, to get his point of view, especially to the end of helping him, seem to have his genuine regard.[96] And it should be noted that when we asked him to omit reference to all other persons in the community during our study-in-residence, notwithstanding the strength of his feelings about some of them, he coöperated heartily in this respect.[97]

An aspect of the case which is particularly relevant here is Leonard's general attitude toward all of his therapists. We note, at the outset, that he is convinced he *knows, from actual experience,* what he is talking about: "That the child is father of the man . . . I know", he says, "more intimately than Freud, who even in his clinics records only the stuttering revelations of the tongues of others".[98] Our subject admits that as respects motives compared to memories, "self-analysis can doubtless go much farther in the second than in the first";[99] still, "When the problem impinges on ethical experience and character, only one who has lived through so much and so long can fully grasp the issues here". "I question if scientifically it is possible for you . . . to grasp what *life* has cost me. I speak as a white haired man of fifty-one—not as a youthful sentimentalist of

[95] Note, Jan. 20, 1922; autob., 2:177, 1:20, 22, 3, 4, 6, 16, 20, 33–34, 59, 28, 29, 149; and *L.-G.*, 18 ff., 22–23, 54, 409, 49, 192, 358–359, 140–141.

[96] Autob., 131, 192–193, 2:57, 66, 76, 77, 79; notes, Dec. 2, 1922, May 5, 19, 1923, May 15, June 28, 1924, Jan. 13, Mar. 27, 1925; letters, Sept. 8, 1925, Feb. 24, Sept. 17, 1927, June 24, July 23, 1928; *The Nation*, Mar. 26, 1924, 343 (the poem reprinted in *L.-G.*, 354–356); *L.-G.*, 158–159, 270, 272–275, 281, 286–287, 318, 327–329, 337–338, 345, 354–355, 362–370, 374, 392, 414, 426.

[97] Cf. Note 72, *supra*.

[98] *L.-G.*, 3.

[99] *Ibid.*, 434.

course." Considering also the fact that no cure has resulted, it follows naturally that "I suspect you, and all the rest, know far less about abnormal psychology than you all suppose". However, "It may be that if psychotherapy can say nothing more to this case, this case may have something to say to psychotherapy". Especially with regard to others' (including specialists') absurd interpretations of his trouble, "Even a neurotic may be able to think; and perhaps with regard to neurotic temptations he may think straighter than the technical analyst as to his thought processes".[100]

Of course all his critical thinking, with his undoubted erudition (he has read all of Freud, in the original, for example), enters into Leonard's personal relationship to his physicians or psychologists. No cringing underling he. His first account of his case, written for a psychiatrist of the university clinic, is prefaced by a "Foreword" which begins, "My dear Colleague"; and ends, "I should be willing to have this printed as an unsigned and unidentified clinical document for specialists . . .; but *my* purpose will be served if it serves *your* purposes". This document, written during the odd moments of three weeks' teaching, but amounting to two bound volumes of typed pages, is called "A Phobiac: The Case of Professor X—, as recorded by Himself". (Dated July 20, 1920, it is the "typed autobiography" to which reference is made repeatedly throughout these pages.) With its numerous literary interpolations, and entries of psychological comments and theorizing, though with many interesting observations and interpretations, it must have seemed bombastic to its recipient. Similarly in conversation, Leonard's bothersome habit of doing all the talking himself, not hesitating to cut off his interlocutor with impulsive interruptions, has not always been helpful to those who would work with him. As one who attempted help put it, "Leonard is too able to look down from his intellectual eminence on us, once he knows us, and then we can't do what we would. I don't know whether any one can keep the necessary upper hand long enough; but it must be tried."

Our own method was not to attempt to keep an "upper hand", but to seek to understand, suggest, and lead or encourage him to lead in the various stages of the quest. The utmost frankness with him was our invariable rule. And we wish to record here that such frankness, instead of being intolerable to him, as many

[100] Letters, Nov. 21, 1925, Sept. 17, 1927, July 18, 1926, Sept. 8, 1925; and a note, Mar. 25, 1925. Cf. *L.-G.*, 177.

would have believed, was understood and appreciated by him at every turn. Nor has his friendly confidence in our intent suffered through the fact that he remains unnerved.[101] In every way, personal, financial (including expenses incurred on his behalf, and his early and repeated request that we accept remuneration for our efforts), academic—in every way our relations with him were unusually satisfactory—except therapeutically; and even there, there were some minor points of accomplishment. In fine, we felt this coöperation with us to be far more genuine than many would have thought possible; his admitted foibles and intensities did not complicate our efforts as unreasonably as might have been supposed (unless we have missed something: we shall return to this question); through our analytic work with Leonard, our respect and liking for him was continually increased. (This statement is made primarily as a datum for the present study; not as evidence that we adequately understand the man.)[102]

PREVIOUS THERAPEUTIC EFFORTS.

Various solutions for Leonard's problem have been suggested by physicians, psychologists, laymen, and by our subject himself. We have now to report these interpretations with the measure to which they seem to have been tried in his case.

From the time of his break-down in 1911, the patient watched his physical health carefully, under the direction of physicians. He soon became, and remains, in excellent physical condition.[103] Upon the assumption then that his phobia was a habit which should be overcome by a counter-habit, he began to attempt to "extend his beat" by deliberate effort. This effort, which has been almost unremitting for sixteen years, took several forms. When well-rested, he would force himself a little farther in the same direction each day; or if thrown back by the phobia in one direction he would retreat a little and then go farther in another direction; or he would get greatly interested in some line of thought, so as to go farther without noticing it (a method he found dangerous as he was liable to "come to" with a jolt); or he would "grind" cruelly past the phobic boundary by sheer force of will, or maintain

[101] Letters, Apr. 8, Sept. 8, 1925, July 18, 1926, Feb. 24, 1927, July 10, 1928; notes, Feb. 25, June 15, 1924 (in which he expresses his *personal* confidence—an estimate of the "personal equations" between him and his various counsellors), Jan. 13, 1925; and *L.-G.*, 392.

[102] Letter, Apr. 8, 1925; notes, Jan. 28, Feb. 17, 24, July 7, Aug. 12, 18, 24, Sept. 12, 1923, Apr. 15, 1924, Jan. 13, 1925; and *L.-G.*, 251, 410, 422.

[103] Autob., 111 ff.; and *L.-G.*, 311 ff., 323, 413.

willingness to be carried beyond it in a conveyance (with increased restriction afterwards as a consequence). Barring these more violent methods of drill, however, he remarks that "all such permanent improvement as I have made has been in the nature of breaking a habit".[104]

Determined not to flee from the thing, he went back to the spot at which the phobia first came on in its present definite form (in 1911), and walked over the ground in a rational frame of mind. This he followed by visiting and looking around the house of painful memories, the place where his wife had taken poison. Thus he tried to do what his mother had sought to have him do just after the locomotive scare in 1878, and what obviously he ought to have done for every fright from childhood on, in view of the tendency of the various frights to reinforce one another's repressions.[105]

Soon after his breakdown he began the use of autosuggestion (although "it all seemed hocus-pocus more or less"). "At night before sleep, month after month", he writes, "I placarded my room . . . with encouragements like [the following, in substance when not *verbatim:*] . . . 'I am in perfect physical condition.' 'I am where I am what I am—strong, reliant, buoyant, aggressive, purposeful, wherever I am.' 'Let me think of the scope of my life—the creditable work I have done—the recognition received.' 'I am just at the beginning of a national career. Life is ahead.' 'I have the best sort of friends, who understand my difficulties and believe in me. I will be loyal to them.' 'Others have had similar troubles.' 'People get over it without help in time. I can get over it with help in a briefer time.' 'My mind is free to range through all space and time, all science and history.' 'I will kill on the spot every baneful suggestion—every hint of incapacity or anxiety.' 'Sunshine and rain, calm and wind, valley and hill, summer and winter, flowers and snow and the open road—if not in one direction, in another.' 'I will think of travel—freedom to go everywhere that I had and *have now* except for a passing mental trick.' 'There's never any need of its coming—and if it does come I can take care of it—I always have.' 'It is nothing.' 'Don't take it too seriously—it's a joke.' 'There is nothing worse than sunlight, good roads, beautiful trees and flowers and friends, and the old familiar world wherever I go—so *go—go.*' 'I have

[104] Autob., 124, 2:37 (quoting); notes, July 28, 1923, Mar. 29, 1925, etc.; letter, Sept. 8, 1925; and *L.-G.*, 316, 325, 332, 349, 364, 402, 412, 414.

[105] Autob., 189–190; various notes; and *L.-G.*, 15, 16.

made progress.' 'I will read these cards three times meditatively daily. Morning, noon, and especially before retiring.' "[106]

He tried also (though no doubt with less conviction) certain suggestions of religious character; he read books on self-suggestion; and he attempted a more specific type, as evidenced in his notes of a dozen years later: "There's no *use* in being a child any longer." "Somewhat better last two weeks—but apparently only by use of the old devices—before this psychoanalysis—auto-suggestion as I walk and try to reëducate my feelings toward specific present surroundings—*e.g.*, getting a little further down State Street merely by getting a little more feeling of the normality of State Street." "I have been continuing lying down with less reference to old memories, more attempts to envisage myself as free—picturing free movements (specific wanderings) in past, and projecting myself as free in specific goings (as to square or Wingra Park) in future. Am better than when Taylor left by about two blocks—but this is the old, old way in which I used to make my gains." He also carried out a number of attacks, through imagination or writing, upon problems that were more or less symbolical of his own.[107]

Heterosuggestion too was tried quite early. In 1912, our subject wrote Professor Münsterberg seeking "a little assistance of the kind you have so competently given to others. . . . I am writing to ask you to furnish me in your handwriting, if you will, some brief sentences of suggestive value. I think I would be helped even by the mere assurance that the authority of your name would have." Münsterberg wrote a letter "full of astute 'suggestions' ", which Leonard carried in his pocket "for years". During the year 1922–1923, hypnoidal suggestion was applied by the writers. From a psychiatrist, Leonard received some suggestions for physical exercises with relaxation of all muscles. Other suggestions included a maxim (which had undoubtedly given many patients courage and a new point of view), that "when you come to the end of your rope tie a knot and hang on". "But", comments our subject in a note written at that time, "the trouble for an intellectual man with such maxims is that he *sees through at once their superficiality:* when you've come to the *end* of your rope, there's *no room* for a knot and *no strength* to tie a knot.

[106] Autob., 155–156; notes, 1912; and *L.-G.*, 325, 346, 383, 390, 412, 415.

[107] Notes, 1912; letter, July 13, 1914 (from his own file, as is the case with all records prior to 1922); notes, Jan. 28, 1923, Feb. 27, Mar. 23, Apr. 6, Aug. 18, Sept. 12, 1924; *L.-G.*, 315, 333, 412, 426; and autob., 2:31–32.

. . . Thus the intelligent man, under psychic treatment, is . . . *handicapped by his intelligence.*" [108]

Naturally in the light both of his critical attitude and of the failure of several attempts at cure, Leonard obtained the advice of different physicians and psychotherapists. These included Münsterberg, a representative of the Emmanuel Movement, and a number of well-known specialists. In general, these counsellors approved the efforts being made, sometimes supplementing them with special methods. One letter to Leonard, more optimistic than any of the others, is interesting in retrospect. Dated 1914, its author wrote: "I should be glad to come to Madison for one day and have you return with me. I could remove your fear in one treatment so that you could travel with me without any distress whatsoever. I could not stay longer because my sanitarium work . . . compels me to be here." For some reason this attempt was not made. Some further check on our interpretations was obtained through conferences and correspondence with persons who knew Leonard during one or more of his periods of stress.[109]

## THE ANALYTIC ATTACK

These early therapeutic efforts having led to no improvement, the writers undertook Leonard's case in late 1922, continuing for some nine months, resuming for a week three months later, and again for a few weeks six months after that, during the summer of 1924. In the meantime, and since, Leonard continued his own

[108] Letter, Oct. 21, 1912; autob., 159; *L.-G.*, 311, 325, 390; and notes, Dec. 2, 18, 1923, Feb. 27, 1924.

This critical attitude of Leonard's, noticeable generally throughout his history, raises the question as to whether he ever really surrendered himself to anyone's psychotherapeutic direction. "No analysis can be a success without transfer", one psychoanalyst exclaimed. Leonard's report is that tests have shown therapeutic suggestion to be buncombe (for him). This is doubtless to be explained partly through his phobia itself, in that the phobia seems closely related to a fear he had of surrendering himself to any sort of anesthetic, sometimes even to sleep, and similarly, to be hypnotized. We cannot claim, for ourselves, to have had his unquestioning submissiveness at any time; and we were unable to get him into a deep hypnotic state. Yet we had what seemed to be a fair state of working coöperation; he became able, after some little practice, to go into a *fair* degree of hypnosis; and he learned to do this with the operator sitting in front of the closed door, instead of keeping the exit clear as was required by the fear at first. Cf. *L.-G.*, 325, 390; autob., 112; and notes.

In connection with the question of transfer, two diverse views are those of H. W. Frink, for example, and Morton Prince. Cf. H. W. Frink, *Morbid Fears and Compulsions*, 218–219 (Dodd, 1918); and W. S. Taylor, *Morton Prince and Abnormal Psychology*, 86 (Appleton, 1928).

[109] Letters, Oct. 21, 1912, June 26, July 9, 10, 13, 1914, July 4, 1915, Apr. 15, June 15, Aug. 22, 1924, July 5, 1925, Aug. 25, 1928, and others which Leonard has; autob., 141–155; notes, Feb. 22, Dec. 3, 1924, Jan. 1, 1925; and *L.-G.*, 286, 392.

efforts, with occasional suggestions from us; as described in the pages of *The Locomotive-God*. (His own efforts constituted by far the major portion of the work.) The principal effort was to "discover the causes" of his trouble, by all the ways of recall known to psychotherapy.[110] Throughout this "digging" it was assumed by all three that "in matters pertaining to himself the cleverest of men may be rendered stupid by an affect" (Stekel); that the roots of the trouble might be multiple; and that "the real" trouble might not have been touched yet. All "findings" and suggestions of solution were recorded immediately upon their occurrence.[111]

There seemed to be only one point of difference in the assumptions held by patient and operators; and that difference may be only a matter of emphasis. Our subject seemed to attach more importance than we did to the maxim of certain psychoanalysts that "the trauma (or traumata) must be *re-lived*"; or, it may be more true to say, we operators attached more importance to the *re-setting*, the reëducation on the points of trauma, than to the "re-living" of them. It was just this difference upon which there occurred a minor misunderstanding at one time in our correspondence. No cure having resulted, it was suspected that Leonard's artistic, and some would say, mystical view of the significance of emotion in man's world, combined with an explorer's interest in discovering his childhood memories, were leading him to *practice* the very emotional attitudes we sought to counteract.[112]

We wanted him to practice in imagination the *overcoming* of each of those original frights. For example, he was advised, "Think of the steam locomotive and of your walking up to it inspired by its bigness and power. Think of the school from which you ran [in mortification and terror after a pants-wetting—the 'home run' motif first explored] and of standing still and letting the fellows . . . yell at you. . . . Think indeed of answering the fellows' questions with perfect frankness and letting them make of it what they will." In short, "build and keep on building new sentiments . . . around the several original sources of irritation. . . . This would be auto-suggestion at the roots which, naturally, must yield more sensi-

[110] Notes, 1913(?), Nov. 4, 1923, Jan. 30, 1924; autob., 141–148, 2:1 ff., 45; *L.-G.*, 388–408, 413; W. S. Taylor, *Readings*, 692; Morton Prince, *The Dissociation*, 210, etc.; and Note 11, *supra*.

[111] Autob., 158, 183; notes, Dec. 1, 1923, Dec. 30, 1924, Jan. 1, Apr. 4, 8, 1925; and W. Stekel, in *Outline of Psychoanalysis* (J. S. Van Teslaar, Ed.), 331 (Boni, 1924).

[112] Cf. Note 101, *supra*; and *L.-G.*, 419, 424–426.

tively than can the full stalk." Thus it was hoped that our subject could acquire deep-penetrating conviction, reëducation, on the non-fearfulness of what he had feared.[113]

Leonard's own view however was that if the 1878 fright, especially, "could be brought back *realistically* (and I could make it really an integrated experience in fully conscious recollection), that then I could *realistically* convince myself of the needlessness of the fright and make the 're-setting'. It seems now thuswise: as if I needed to convince my subconsciousness that it was nothing—and can't produce that conviction upon my subconsciousness at all (cf. the continued spells of heavy breathing)." In this insistence it may be, of course, that he is perfectly right: he is "on the inside", to an important extent, even when he remains uncured; and the psychoanalysts cite evidence that such "re-living" is necessary for certain patients. Incidentally, Leonard urges several distinctions along this line. In particular, he distinguishes between (1) "a *release* of buried *emotion*", (2) "a *readjustment* of *thought*", and (3) "a shift in *emotional attitude*".[114] Yet whatever difference in presuppositions may have existed between Mr. Leonard and ourselves did not seem to hamper this coöperatively analytic attempt.

Throughout these therapeutic efforts Leonard believed, apparently, that his cure would result, that his freedom would be regained; until, after a long period of work without satisfactory results, his attitude settled down into that of a vitally interested observer.[115] And he sought to maintain an attitude of "construc-

[113] Letters, May 9, Nov. 18, 25, 1925; and *L.-G.*, 414–415. The point is developed especially by Prince. Cf. W. S. Taylor, *Morton Prince*, 71–79.

[114] Notes, Sept. 12, 1924, Jan. 1, Apr. 8, 1925; letters, Sept. 8, 1925, June 24, 1928; and *L.-G.*, 406–408, 410, 413–416, 425–426, quoting 415–516.

Cf. H. W. Frink, *Morbid Fears and Compulsions*, 513–522. See *The Stages of Recall, infra.*

[115] Notes,—very convincing ones—Dec. 1, 1923, Feb. 22, 24, 1924, Mar. 27, Apr. 8, 1925, Mar. 25, 1926; *S. E.*, 138; *L.-G.*, 402, 414; notes, Jan. 19, 28, Apr. 22, May 10, June 27, Oct. 31, Nov. 10, 15, 18, Dec. 1, 1923, Feb. 14, Mar. 15, Oct. 16, 1924, Mar. 27, 29, 1925; letter, June 15, 1924; and *L.-G.* 413.

Two typical examples of the latter (observer) class:

"I'm only a very little better [now, June 27, 1923] than last November [when we began the systematic probing], and in general nowhere near as much better as in 1918—or even in 1914. This is a greatly important problem. My phobias of [dark] days and of my wife's being out and of my being without cane seem to be the most affected for the better through these long months of work—but even these have been better than now—at a time long before we began these investigations. I can walk comfortably—usually—only as far as the square or the bridge in University Bay. . . . *Why* don't I get *well?*"

"It is now today [Nov. 15, 1923] just one year since the beginning of these experiments. They have occupied most of my time, free from eating, sleeping, walking (exercise, etc.) and a minimum of professional duties. I am far worse, in spite of

tive thinking", forgetting his own troubles, over considerable periods (especially when not working systematically on his analysis).[116] As for the interpretation that his troubles have been nurtured by his later systematic efforts to analyze them, our subject remarked, at first, that "Hugo Münsterberg, whom I knew as a friend, advised me by correspondence never to read a book on abnormal psychology. Perhaps the advice is in general sound; but with me the analytic and the scientific habit is much more developed than in most men professionally engaged in literature or in affairs and such study above all has helped me to *objectify myself*. Whether this scientific knowledge would balk the scientific psychiatrist in dealing with my case remains [in 1920] to be seen." [117]

By 1923, after nearly a year's "probing", he began to feel that he had been made at least temporarily worse by the experiment. Thus: "The only certain connection between the probings and my condition thus far is that the probings have made me *worse* . . . hence there is reason to think complete memory of the locomotive fright and a readjustment to it may help or even cure".[118] By 1924, he felt so much worse that he thought he must stop all analytic efforts. "These are probably the last notations I'll be sending before you come west", he wrote in May, 1924. "I hope nothing prevents that journey. . . . I have improved not a bit, have gradually been more limited in movement, with the tendency for the attacks to become more sudden and violent (though I have some control over them). The attacks themselves produce and leave me with those somatic sensations in chest and

an improved condition part of the spring and early summer, than I was when I undertook the probe with T. and C.—far worse in the phobias, and have remained since the relapse of last August [a stressful incident] about on one level in my condition. On the other hand an immense amount of utterly forgotten life in childhood has been recalled—practically all of it directly or indirectly bearing on my neurosis—and at the present moment indeed I seem at the very outer walls of the subterranean hole, and about to break through after such long tunnelling. I can't say what the result will be. But, if I do not recover normal health—but remain even a worse victim than in previous years since 1911—*Taylor and Culler are never to be blamed in any way whatever. All that has been attempted has been with my full consent, and sometimes indeed at my own initiative.*" (Notes.)

116 Autob., 156; *L.-G.*, 240, 313, 332, 334, 390; letter, June 15, 1924; and the following note (Nov. 3, 1923): "One often hears the easy and fatuous comment: 'forget your troubles; be interested in somebody else beside yourself, and you'll get well'. Let me set down the following for *science:* since early last summer I have been *daily* preoccupied with the affairs (physical and spiritual) of . . . the most interesting and appealing and desperate case of helplessness, gifts, and misfortune I've ever known . . . to the *exclusion* of myself. *And* it's made NO difference in my neurosis".

117 Autob., 141.

118 Notes, Oct. 31, 1923, Oct. 16, 1924; and a letter, Aug. 24, 1925.

throat (as was never the case last fall [when our probing began]). I've more and more adjusted my peace of mind to my little circle of freedom—but the concern is for my wife, who too has, however, adjusted herself more and more—and lives from day to day. When you come west you will have a very clear-cut problem—though a terrifically puzzling one. It is plain that the depot (1878) and the school (1885) are the big frights of my life and intimately entangled with all phobias before or after 1911—especially entangled with my *present* suffering. But I am beginning to wonder if what I've had from 1911 has not finally *become* a *conditioned reflex per se*—the thing I used to call phobic habit—and not curable by restoring forgotten memories. If so, I've found nothing to cure it—I had it under some control off and on for years; but the set-backs have been so numerous that I'm unable this last year to break through the habit at all by trial or by suggestion, no matter how persistent. On the other hand there remains the symptomatology of *connection* (dynamic) with those two specific frights. It is plain that the *core* is *steps* of house of collapse plus instant of on-coming train, *i.e.*, that the two are subconsciously intensely interfused almost as one. I can't get them disentangled or in any vivid reality into memory—I recall both very vaguely as memory, very fiercely as emotion (psychic, somatic). The resistance has broken a little—but by no means much." [119]

Again, "There is not the slightest doubt that the experiment has made me worse these three years—or at least *entirely held up* any help of the sort I used to get by repeated efforts of self-control, by physical exercise, by the craving for and the lure of places beyond my beat. I make this observation after a huge mass of evidence. . . . When I've recovered a little in former years (before the experiment) it has been by getting the lid *on*—in taking it off (or nearly off) thus far I've lost out. And the 'common sense' of the layman is shown thus far to be right: 'let sleeping dogs lie' . . . Am going to try the experiment for a while of no digging—and avoidance of trying to think about it. Taylor suggests and I've had the intention but all the time I've been tempted with the hope—'now I'll get it'." [120]

In 1925, Leonard reported that the cessation of analytic efforts had eased his symptoms somewhat, but that the probing had never-

[119] Notes, Apr. 8, May 15, 1924. Cf. letters, Apr. 15, June 15, 1924.

[120] Notes, Mar. 27, 29, Apr. 8, 1925. Cf. similarly, letters of May 4, 1925, July 10, 1928.

theless left him in such a condition that betterment could no longer be expected. "I am *under* the claws absolutely." The following year: "I reiterate my deep appreciation for all you attempted at such expense of time and patience; I am myself solely responsible for the result—which has been simply disaster and ruin beyond all count. There has been no change of any sort since I last wrote you—perpetual constrictions in body (throat and chest), perpetually broken sleep, perpetual restriction to a few blocks for both self and wife. There is nothing whatever in any attempts of any sort, inner or outer. Relative to where I now am, I was *well* at the time I began the experiment. I have the cause, and in getting the cause, I blocked all cure, apparently. I won't attempt speculation as to reasons. My wife has developed a resignation and so—in a way—have I. I will resent from any man any imputation of supineness and 'giving up'. I have struggled beyond human powers; and been thrown down. And I speak not as a discouraged neurotic; but simply as a man who sees and knows a reality. There's nothing to be said. If it breaks up, it breaks up—if it doesn't, it doesn't. I am helpless. Best wishes. W. E. Leonard." [121]

Thus these statements oppose an interpretation at the close of 1923 (after a year of effort at analysis) that "our study and work has had absolutely no effect (for good or bad) on my neurosis, either in its degree of intensity or in its quality—it is the same old thing exactly, with the same ups and downs, responsive only to the same old influences, only that, with increasing years, the confidence . . . of the physique as supporting me in stress and the old hope of betterment with its suggestive value and its tone, is *lessened*". This interpretation he reinforces in his published volume (1926) by the statement that "there is no evidence . . . that my condition has been perpetuated by any psychological strain of the four years' investigation". Yet these more favorable views seem to be set at naught, once more, by another statement in *The Locomotive-God*, and by this note, dated 1927: "My thanks again for your services [in checking up certain memories of childhood]. If good will in the service of intelligence could have done anything for me, I certainly should be well. . . . My book [*The Locomotive-God*] is an autobiography with ethical and psychological emphasis. There would be still plenty of chance for a monograph, if you ever cared to write one. But my part

[121] Letters, Sept. 8, 21, 1925, July 18, 1926.

in the business is over—my neurotic condition makes any further dealing with the problem impossible." [122]

He maintains, however, that "practicing the fear . . . to stimulate recall" has not been engaged in to any harmful extent; although, as already noted, he thinks that the phobia itself has become a habit through its own morbid functioning. As one psychologist has suggested to the writers, "Why should abreaction, catharsis, or any of that sort of thing be expected to set aside the law of habit? I look at the phobia as a partial dissociation, well constellated and organized, comprising at the outset (1) a major, professional self, and (2) a phobic self. These two selves I take however to have certain elements in common: if we think of the professional self as composed of elements *a* to *r*, we may regard the phobic self as composed of *m* to *z*, with elements *m* to *r* common to both selves:

$$(a.....(m.....r)\ s \qquad z)$$

These common elements, when active, will excite both the 'normal' and the 'abnormal' reactions; while elements *s* to *z* remain as 'irrational' causes of the phobic behavior—causes not yet within the ken of the major self *a-r*. Now this major (or professional) self has lately been extended by analysis and insight to embrace most of *s* to *z*, with the result that at present we have a more extended integration, say *m-w*, within the major integration, which is now *a-w*, leaving only *x* to *z* to be discovered through further analysis:

$$(a.....(m.....w)\ x\ z)$$

But even a perfect analysis, leading to perfect insight (*a-z*), would still leave the phobic habits (*m* to *z*) which at this late date may not submit to ordinary reëducation." [123]

### THE STAGES OF ANALYTIC RECALL

The way in which memories return under psychoanalytic treatment is repeatedly illustrated in *The Locomotive-God* and in our notes.[124]

[122] Note, Dec. 1, 1923; *L.-G.*, 411 (quoted), contrasting with 424; and a letter, Feb. 24, 1927. A letter of July 10, 1928, reiterates the same view.

[123] *L.-G.*, 411; Note, May 15, 1924; autob., 153, 2:37; and a letter, July 11, 1928.

[124] The following may serve as typical of Leonard's notes when busily tracking down a memory:

Report dated Jan. 20, 1924: "The last few days convince me of the *reality* of the fright recorded in mother's diary, June, 1878, of its *continued existence in the subconscious*, and of its *central dynamic relation to all the phobias of childhood* (bells, bands, hand organs, going under bridges with cars *roaring* over my head), from third

The following schema represents, as accurately as possible, the successive stages or levels of recall in our analyses, even though some stages may have been telescoped or omitted in particular instances.[125]

I

*Either:*

*Imagery without specific feeling*

Here a pattern, or a number, or a word or phrase, slips into consciousness, sometimes as an immediate response to analytic effort, and sometimes at other times, but without any noticeable feeling or meaning: the item is empty, detached; until such time as the meaning comes back to it through further work.[126]

*Or:*

*Bodily shudders, general uneasiness (not localized in specific organs)*

The notes contain numerous comments: "shudders" or "violent shudders"; "in the midst of the most violent bodily shudders the

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to sixth years (about), and its *central significance* for the phobic horrors of 1885 (which *modifies the pattern* into the form of my present disorder (1911–1924). What a chapter! No doubt of all this. MOST IMPORTANT DISCOVERY I'VE MADE. PROOFS LATER".

Later (Feb. 15, 1924) we find the following: "I [now] remember being ashamed of the fuss I'd made after my mother had set me down, and her leading me to look at the locomotive (a man was oiling the wheels) and our going home, she and I and a third person (the negress?). I *do not remember the locomotive as it rushed upon me*, nor my flight to my mother nor my mother herself until after the scare, nor her consoling me; but I feel it and have had various hallucinations (screams heard vaguely, whistles, ringing bells far and tinkly, images of legs and arms clinging, etc.), and have been physically uncomfortable much of the time, day and night, for weeks with constriction of the chest and a lump in throat. Moreover, several times . . . there has been a *violent* blocking, sudden and startling, of something starting to surge up in me. This is the barest outline, and confined only to the locomotive motif; but it must convince you, as it does me, that the *cause* of my life-long difficulties (note, for instance, the *depot* breakdown in Cologne, 1903) has been *discovered*. This itself is a positive achievement—intellectual if not (as yet) therapeutic. I feel quite confident the core—the fright itself and the on-rushing monster—will yet be brought into consciousness. I await the practical result, you may imagine, with some interest . . . some hope. My mother, by the way, verifies the memory (not suggested by anything in her diary) that she did take me round to look at the locomotive on *that* occasion, so I am not fusing different memories. I have also other memories—street, wagon, etc., Quaker Meeting House, etc.—associated with the 1878 episode—much to make it real".

125 Most of this outline was submitted to Leonard in October, 1928, with the question whether it correctly represented successive levels of recall in his analyses; to which he replied, "In general, yes; repeated hundreds of times, successively, with different successive recalls". Cf. Note 114, with its text, *supra*.

126 For examples see *L.-G.*, 396, 398, 399.

Another subject (cited under II, below), during hypnoanalysis one time saw "a black square". It came as a sort of curiosity merely. "*What* is it?" he was asked. "Just a black square, that's all; solid black." "*Where* is it?" "I don't know." "*Whose* is it?" "Well, the name 'John' comes to me; but I don't know why." After a time, however, the "black square" became clear. It was the open door of

memory of a moment . . . returned"; "wildly rapid pulse" and "diffused terror without content" when lying down, which ranges in intensity from "vague anxiety to intensest feel of impending death"; "shudders . . . come sometimes at once with the ultimate meaning of the hallucination, and sometimes long before . . . where the hallucination has no meaning at all . . . till months or years later".[126a]

(In beginning a hypnoanalysis, it is noticeable that one subject will experience an emotional disturbance as the first sign that "something is coming", whereas another will have a "free rising" image first without noticeable emotion. Do these differences reveal personality types, or types of neurosis?)

## II

*Vivid feeling-tone with imperfect, weak imagery*

A mere vague wraith of a locomotive enveloped the school mob, but they "generated fiercely the *feel* of a locomotive"; "the Chapel Front became entirely to my feeling, and half to my vision, a locomotive". In this stage the somatic agitation is strong but still diffuse, while the memory is beginning to appear in weakly imaginal form.[127]

(*Pallid feeling-tone with imaginative feigning*

"Sometimes, when the data have been very evanescent and vague . . . my mind has feigned a complete structure" which at first seemed like "memory far and tenuous"; but being merely imaginative, "it continues in that pallid tone and leaves me emotionally undisturbed".[128] The memorial material is still so faint as to be readily displaced by imaginative constructs, which carry him away from the true focal material and therefore leave him cold. When this phase appears, it means that he is getting away from the true path and temporarily losing the scent.

As another subject comments upon reading this part of the manuscript, "Why not make 'II' into two stages? In my experience the inevitable tendency, after vivid feeling with weak imagery, is to see some scene which might fit in, but which is thought of with a calmness strangely different from the previous painful emotional state. This represents the easiest way out!")

"John's" garage, seen at night; a picture connected with a most distressing incident which had been "forgotten" for many years.

[126a] *L.-G.*, 250, 319, 321, 398; cf. 302.

[127] *L.-G.*, 61, 302; cf. also 80.

[128] *L.-G.*, 79.

## III

1. *Hallucinations combined with specific feelings or somatic reverberations*

During twilight sleep a pain in the left jaw "grew of an instant fiercely more acute, as I felt myself hit by a tin can and heard it . . . bang along before me"; the "pungent odor of a phantom cigar" haunted him many times until he recalled a man smoking on station-platform in 1878; at times he has had "terrific smarting of the eyes,[129] bodily twitches and itchings, sneezings, gaggings, tears streaming down my cheeks". As he gets nearer the original incident, the diffuse shudders and affective states of the earlier stages are replaced by more definite and localized somatic accompaniments. These latter differ from the shudders in that "they are often identifiable as a somatic integer of the original experience"; while the shudders seem to be "emotional reactions of the mature subconsciousness", mainly of terror but sometimes of surprise and triumph in discovery.[130]

2. *Imaginal fusions*

Sometimes there are associative fusions of images; both elements are true memories but are not yet wholly disentangled.[131]

## IV

*Vivid imagery plus vivid feel*

The whole memory is now integrated and possesses a "tone of reality". The union of these two criteria is for Leonard a sure proof that a given recall is objectively sound.[132]

### INTERPRETATIONS

The most interesting fact, perhaps, about the numerous interpretations of Leonard's case is the firm conviction with which the most diverse explanations are proposed by different persons, professional as well as lay.

1. *"Causal" Possibilities*

Occurring rather late in the study of Leonard's case, but worthy of mention before other interpretations, is the view that his trouble

[129] This introduced a memory from childhood: a large wave had broken over him, while playing on the seashore, and the salt water had made his eyes smart (our notes; not reported in *L.-G.*).

[130] *L.-G.*, 250, 302, 395 ("a feeling of acquaintanceship, peacefulness and affection"), 399.

[131] *L.-G.*, 68 *f.*, 395.

[132] *L.-G.*, 79 *f.*

is owing not to obscure "repressions", but to the simple persistence of infantile attitudes. In psychoanalytic language, "this patient never broke his psychological umbilical cord". In more psychological language, perhaps, the interpretation is that "the basic cause of his neurosis was the unwise home training he had, which created, as Prince calls it, 'a psychological torch' so that the experiences he passed through were able to create the profound influences they have": "forgotten memories are only of secondary importance in the neuroses—they only furnish the pattern; it is the something that keeps these memories alive that we have to get at". This view was applied, with vigorous efforts toward reëducation, over a period of several months, but without success (which of course in no way disproves the truth of the view). Leonard's reaction, however, as recorded by him at the time, is that "this much I knew the day after my breakdown—when I sized it up as 'infantile regression' (using that very phrase). But it seems to me . . . that there are too many clinical records showing that phobias *are* suppressed memories. The wrong attitude, the infantile, is in these very fixations. . . . [Again,] the variability in intensity of my phobias seems plainly to indicate definite dynamic subconscious complexes, not a merely infantile attitude".[133]

Similarly, it has been suggested by other students that the etiology of the disorder must include "a very bad inferiority complex, for which the subject compensates with egoistic bumptiousness", and, we might add, with tyrannical imprisonment of his wife, while the inferiority complex manifests itself directly by keeping him within the bounds of motherly protection. Some support for this view can be found in the fact that, as Leonard remembers it, sometimes it seems that his "whole childhood was spent in being scared"; with the result that the urchins of the neighborhood often exercised their ingenuity upon "Baby Leonard", as they called him during his early years. They took similar advantage of the history of the school "home run" incident—an incident which reminded him of a "bladder weakness" which itself might have implanted a feeling of inferiority. (The fact that by the age of twelve or thirteen his superior physique and intelligence enabled him to meet his fellows upon their own ground would not necessarily vitiate the suggestion of an inferiority complex thus grounded.) Later, he did feel a real inferiority with regard

[133] Letters, Dec. 26, 1923, July 2, 1928, Oct. 21, 1912; notes, Dec. 18, 1923, Feb. 22, 1924; and *L.-G.*, 409.

to his economic status. This "lead" seems to have been almost wholly neglected, in studying his case psychoanalytically; and perhaps quite unfortunately so.[134]

The analytic suggestion which has been carried farthest, in the case before us, is that the phobia derives from particular stresses, now "forgotten" or unappreciated. It certainly seems that there were frights which had been "repressed" since childhood; and the recovery of these to consciousness is a central theme in *The Locomotive-God*. There were also fear memories of childhood and especially of later years which were *not* suppressed. These *seem* to have been well recalled now (though not exactly "re-lived" in every respect); and Leonard has tried to reëducate himself on the several points recovered. As he remarks, "I *seem* perfectly aware of the uselessness of that original fright—I seem to have re-set it".[135]

No cure appearing then, the analytic interest turns to the possibilities of various thwarted urges. The first logical possibility here, perhaps, is in connection with the urinary function. A follower of the psychoanalytic school points out as significant "the fact that he *forgot* to attend to his physical needs before school" (on the day of his school trauma). Others would doubtless urge the erotic or other significance of his early "bladder weakness". We confess to not finding anything important in this connection; although it would seem that forgetting to attend to physical needs may be more common in interested children of an obsessively neurotic type than in equally intelligent normal children. However this may be, it is interesting to note that several hypnoidal hallucinations of a phallus, at first interpreted as sexual in significance, turned out to be mere items of (phobically related) urinary history.[136]

But as for sexual possibilities, we may consider first that of

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[134] Notes, Dec. 2, 17, 1922, Nov. 15, 1924, July 5, 1928; and *L.-G.*, 17, 25–34, 57, 61, 63, 77–78, 95, 108. As one psychological reader of the book points out, "Does he not again and again enlarge, himself, upon the humiliation which he, as a boy, suffered before a girl in whom he had some special interest? Wounded self-assertion! While fully realizing how superficial is the judgment, and how utterly inadequate to the deep problems of the case in its baffling details, my own feeling is that it is essentially a case for Adler. The *core* of it all seems to me to lie more probably in the baffled self-assertion of a sensitive, gifted and proud nature than in the incident to which he traces it, interpreted as he interprets it" (letter, Aug. 25, 1928).

[135] Notes, Dec. 17, 1922, June 29, 1923, Feb. 27, 1924; letter (quoted), Sept. 8, 1925; and *L.-G.*, *passim*, and 415.

[136] Notes, July 5, 1928, Jan. 6, 26, July 1, 1923; and *L.-G.*, 56, 107. A "coprophilic" item is recorded in the autob., 2:18–19. On "the neurotic type", cf. W. S. Taylor, *Readings*, 648–649.

simple continence. To quote the follower of psychoanalysis again, "It is not *normal* for a man to have waited so many years [until marriage at thirty-three] for his first sexual experience!" As a result of such current statements, coupled with the observation that any tendency to fall in love on his part or any pleasant association with young women was associated with improvement (so long as social conflict did not ensue), Leonard was inclined definitely at the outset toward the continence theory as the ground of his phobia. But reflection upon his good health, and the observation that the second marriage only assuaged the phobic condition for a time, led him to conclude that continence was not the responsible factor. When, later, one reader of his book wrote: "Your phobia expresses your fear of sexual intercourse; compare the accompanying diagram of sex symbols" (the locomotive's headlight box represents a vagina, etc.), Leonard replied simply that the box is "a literal experience. . . . Besides, I have no fear of sexual intercourse". Still, we cannot say that the physical side of sex is absolutely excluded from the clinical picture.[137]

It is true that his adolescence was marked by the usual puritanical depression over "the intermittent return of gross physical discomfort too great to be resisted and unrelieved [by masturbation]"; but he "reasoned out a correct physiological explanation very early, soon finding it endorsed by a medical work of some authority". (This book he "discovered once hidden away in a bureau drawer, with the very pages dealing with this question already somewhat thumbed—as if my mother had already read and known that the physical consequences were not what she had told me they were".) The problem of nocturnal emissions was similarly disposed of, though after considerable worry. His conclusion is that the conventional stress of those years became related to his neurosis "only as generalized preparation". It is also true that at twenty-five, a "turn-down" by a girl with whom he was in love resulted in his being "practically without sex cravings of the physical sort" for several months, a condition that was repeated for a similar period after the suicide of his wife. Further facts that might support the sex starvation hypothesis are that an early phobic attack came just after Annie's refusal to marry him; that the mild chronic phobias came on during his first marriage, when there was always anxiety about impregnating the

[137] Notes, July 5, 1928, Dec. 2, 1922, Feb. 5, May 10, June 6, July 1, 1923, Mar. 27, 1925; *L.-G.*, 109, and Addenda II (to second printing) (5 d) (quoted), (5 e); and autob., 147, 2:5, 15, 20–45.

woman who had an insane taint; that the chronic phobia took its present shape during the period of sex (and memory) suppression after her suicide; and that he feels he requires romantic love—such a suppression of physical sexuality as occurred after the wife's death being for him especially "horrible and tragic for the suppression of the higher sex-love besides".[138]

But Leonard's interpretation is that these sex factors are important in his case because of the way they played into the *fear* pattern. Just as several memories of apparently erotic character turned out to be elements associated with the early frights, so a number of clear associations between love and fear in his history have appeared to be expressions primarily of fear. Thus with regard to the periods after erotic disappointments, "One might say the sex-urge was *shocked* out of action". Certainly every setback in his love life has shown strikingly this character of shock, really of *attack* upon his personal welfare. He does believe, however, that he "would have been better off in tone, self-confidence, stability of moods", if he had lived during his twenties "in expressive and satisfied sex life" (assuming a favorable social order). It seems that the phobias are accentuated in times of erotic deprivation, simply because of his lowered hedonic tone (and integration) at such times, and because the phobias are aggravated by "any thwarting or worry element".[139]

When we come to the question of "fixations", and the conflicts resulting, we come to a very subtle problem. It should be remarked that for a long time Leonard was especially disposed to find the roots of his trouble in this field, so that he carried on "the most unashamed probing of sex factors", from many angles. Thus he notes his tender and admiring attitude toward his father during all his life; his "ambivalent" relation to his mother—early fondness, jealousy of a parrot she had, resentment at her sentimental mothering of him at times when objectivity seemed desirable—thinking his later unfriendliness toward his mother might be "an inverted Oedipus complex", or part of the school fright suppression; his lack of affection for his sister; his childhood devotion to "little Mary"; possible homosexual trends, including a youthful "affair" or two; the possibility of a "Narcissus complex"; any "exhibitionistic" trend; "masochistic and sadistic components"; and, somewhat along the same line perhaps, the idea that the

[138] *L.-G.*, 100, 104–111, 151; and quoting autob., 17–19, 25–26, 2:28, 32–33, 36–45.
[139] Notes, July 1, 1923, Mar. 27, 1925; autob., 51, 67, quoting 2:33; *L.-G.*, 110, 235, 267, quoting 110; and quoting autob., 2:45.

phobia might be the expression of remorse over possible cruelty to his first wife.[140]

On all of these "leads", after working at them over a long period, Leonard was positive that there was nothing to be found in them; as he stated with finality in *The Locomotive-God:* in his case there are no important sex complexes, "Oedipus or otherwise"; the neurosis cannot be regarded as a "sex-neurosis" (or a "remorse-neurosis" either). Since publishing the book, however, he reports, "Freud wrote me some months ago he believed the father-complex was behind *The Locomotive-God*—and behold, about the same time I was beginning to get (what I've got now in general) an *image* of my *father*, gigantically standing on a coach behind the Locomotive-God, at the instant I peered out over the tracks . . . my thought having been his punishing me for disobeying my mother in going so near the tracks. Use this, though I shall take it up—with much else—if I ever write further (and I project a psychology book dealing with the child-mind, the artist-mind, etc., if I live at all to do anything)." [141]

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[140] Autob., 3, 4, 6, 15 ff., 20, 24, 33–34, 59, 2:1 ff., 18–24, 31–32, 45n (quoted), 56–98, 109, 121, 131; notes, Nov. 24, Dec. 2, 9, 1922, Feb. 17, 24, June 16, Sept. 12, 1923, Feb. 27, Nov. 15, Dec. 4, 1924; and *L.-G.*, 18 ff., 30, etc., 49, 54, 98–111, 137, 140–141, 192, 286, 357–358, 389–390, 409, 412–413, Addenda II (4e, 5b).

The remorse-hypothesis is propounded by one specialist in these terms: ". . . All Leonard has done is to describe in great detail his symptom, how it developed, how it recurred and how it affected the rest of his life. His book is a wonderful defense mechanism. It tells in great detail the sort of thing that gives no insight into the cause of his trouble. He does it in a way to elicit sympathy from his listeners—a device which all neurotics use. Of this part I feel fairly confident.

"I tried as I read to form some guess as to what the underlying motivation could be—why he used the defense mechanism he so adroitly describes. This is hazardous and I give it to you only as a guess of the type of thing it might be. If I were going to work with him, I would not even let myself be too interested in corroborating it. . . . His defense of how good he was to his wife, the fact that he got suspicious of the thoughts of others, that they accused him of causing her death, his writing poems about her and the like, all seem to me to indicate a possible overcompensation. This compensation is not for his actual mistreatment, but likely to cover up a subtle wish that he might be rid of her, a thought so repugnant to him that it probably never came to actual life. His fear would then be that he might have such a desire; and the 'Locomotive-God' is the outward expression of that fear.

"At least, such a theory would explain why he is not cured. The fact that he has dug up the whole pedigree of the phobia only indicates how he learned his defense mechanism and not why he uses it. The latter is essential, it seems to me, for cure". (Letter, Oct. 2, 1928.)

[141] *L.-G.*, 30, 109, 111, 286, 389, 406, 413; autob., 2:45n.; and (quoting) letters, June 24, July 10, 1928.

A Freudian psychologist supposes that before the Locomotive Fright, Leonard had so enjoyed his mother's care of his bodily needs that he desired to reciprocate. Accordingly, thwarted in that childish wish, he now wears his bow-tie as a symbol of the male genitalia, and cultivates his cat as a symbol of the female (see *L.-G.*, 29, 52, opp. 388). His book is an exhibitionistic gesture which would invite a return exhibition from the desired person. His passion for languages is a desire to know what his father is talking about, to know what his father knows. From this point of view, it is not surprising that he should deserve and fear his father's punishment.

2. *"Teleological" Possibilities*

The analysis of *causal* factors having thus failed (therapeutically at least), what can be found in the form of *purposive* factors (to employ a common psychoanalytic distinction)? In other words, what may this neurosis of Leonard's be *getting* him? Or why might he "hold fast" to it, consciously or subconsciously? This view needs to be considered (without necessarily committing ourselves to the theory that all neuroses are "teleological" in character).[142]

A most obvious value which the neurosis could have is to bring its host a great deal of "mothering". As one observer remarked, in Leonard's case "shame for cowardice has never been the dominant idea . . .; rather the pleasure of women's comfort has held center position and given form to the phobias". Closely related is the common neurotic desire for sympathy from people in general. This motive is suggested, for example, by the tone of his later reports to the writers.[143]

Closely related again are various forms of self-centeredness as possible "ties" for the phobia. "*Two Lives* disgusted me", said one reader. "He pities himself so!" A Freudian observed that "he needs to take a mature attitude toward the trouble. Our failures are not so awfully important really". As an explorer put it, "On this last trip [a very long and lonesome one] I got over my phobias. I had to. You know phobias are purely egoistic affairs!" "A group of us who are reading Leonard's book", writes an advanced student, "are sure he subconsciously capitalizes his phobia, and uses its eccentricity for his own ends; and as time goes on, he will enjoy it more". Or in the words of a specialist in mental disorders, "You will realize that when a man makes copy of his experiences he cannot help holding on to them in a way which would not apply if his major interest were in getting rid of them and closing that chapter. It may be that if Leonard had been more drastically treated, these reoccurrences would not have taken place. . . . On the other hand, I find in similar cases that the actual physical upset, that is the feeling of terror that arises in getting away from the familiar and a difficulty in mastering these phobias, is what makes the persistence. It is quite parallel to other neurasthenic cases in which the major symptom is pain, a physical distress: it is the actual wear and tear of that distress that makes the problem. Hence whether or not

142 Cf. W. S. Taylor, *Readings*, 724.
143 *L.-G.*, 409; and a letter (quoted), May 4, 1925.

this factor of literary profit and self-aggrandizement arises to such a point that it can be called a major one, I frankly do not know. It is possible; and certainly in the treatment it should be considered amply." Another expert writes: "Frankly I have been able to read only a third of the book (*The Locomotive-God*), being bored by his style. He is so interested in showing himself a literary genius in his own style that the psychological data sink out of sight. Tell him to forget himself and literary art. He needs a good drubbing to *prepare the way* for a cure." (A woman of culture inquired: "Does he need anything more than a good spanking?") The expert continues: "Recently I made a striking cure of a case of many years' standing of very severe impulsion and phobia of 'hand-washing'. After an analysis by the use of all types of technique (free association, dreams, automatic writing, hypnotic memories, etc.), I finally, when the moment arrived, gave a good 'drubbing'—and presto, the case was cured. It would have kept up as long as the 'analysis' continued. . . . What do I mean by 'drubbing'? It would include explanation, exhortation, appeal to pride, self-respect, will-power, duty, refusal to further coddle (analysis), and insistence upon the patient undertaking the further cure himself, and sternness, etc. This all means *coöperation* through desire and will-power, etc., *and* 'spanking'. . . . 'Drubbing' is an *art* which can not be explained." [144]

Indeed, there is a suggestion that *Two Lives* and *The Locomotive-God* express a profound urge to create, out of life itself, something that will establish the author as a great artist-scientist. How much he holds to the logical converse of his remark that "the more complex the mind the more complex the neurosis", and how much he really feels that neurosis may be a spring of genius, it would be difficult to determine. It is clear however that for him art and life have always been identified fundamentally; from his youth he has looked forward to living and creating; and he has sought (and attained) eminence in broad fields of knowledge. With regard to the success of *Two Lives,* he reflected: "This, then, is at last the fulfilment of your boyhood dream among the Bolton Hills . . . to write a poem that mankind would not willingly let die; but the laws of art . . . which are the laws of life . . . would allow that fulfilment only on their own awesome

[144] Quoting notes, July 6, 1927, June 3, July 21, 1928, and letters, Apr. 27, July 11, Aug. 12, Oct. 10, 15, 16, 18, 1928. Cf. the first line of *Two Lives;* and the following remark by another reader of that work: "He undoubtedly has poetic ability; but this production is too personal in its subject matter. If he gets well, he may write a great poem".

and terrible terms. Would I have dared to foster the dream, had I known? . . . Yes, I believe I would."[145]

Suggestion that Leonard's phobia plays into this great ambition is found in the fact, previously noted, that as early as 1920 he wrote his autobiography with an eye to its possible publication for specialists, and in his reiterated declaration since that his case has extraordinary scientific importance. Two authorities go so far as to take *The Locomotive-God* itself as "a splendid piece of romantic literature. It expresses the conscious struggles of a dramatic mind in conflict with the harsh reality. Those who have had a great deal of experience in analysis of the difficulties of neurotic people have convinced themselves that much of the material they get in analysis is created by the imagination of the person and there is no real basis for the material obtained". With reference to the father-image, lately referred to, for example, "we strongly suspect this to be literary imagination".[146]

Other suggestions are that our subject uses his phobia as a protection from defeat—he is saved from giving foreign lectures, addressing scientific conventions, etc.; that as "a very tyrannical personality", "he plays it up to get what he wants", such as revenge, or servitude, from his parents, wife, or other persons; and that we must always allow for the great urge for *consistency*, for justifying his phobic and other weaknesses in terms of an enlightened system of explanation. In the words of a psychopathologist, "Of course as a rule the type of defense he has chosen is peculiarly satisfying to the individual".[147]

To all of these hypotheses, Leonard makes reply. "I've . . . often wondered if in some subtle way I was clinging to the phobia . . . but I can't be sure. Certainly with all my *conscious* mind I hate and loath it as a supreme curse" (1920). "To live with cowardice has a terrible effect on one's manhood. It affects one's self-respect." "Much of the time for the past twelve years I *feel* very much like a six-cylinder machine running on one cylinder." But "it is a damnable insult to my character when I'm told to crush my craving for 'sympathy'. In my attacks I crave—wildly—for help, *help* . . . one might as well accuse a

[145] Note, Dec. 1, 1923 (quoted); *L.-G.*, 4, 74, 86, 89, 90, 119, 139, 295–596, 338, 417–418, 424, 426, 427, Addenda II end, quoting 419; autob., 54, 58; Notes 81, 89–94, 144, *supra; Two Lives*, 37; *V. M.*, 111; and *S. E.*, 27, 28, 29, 51, 80, 84, 125, 138, 139.

[146] Letters, Nov. 21, 1925, etc., quoting July 2 and 11, 1928. Cf. similarly *L.-G.*, Addenda II (4e); and a letter, Aug. 28, 1928.

[147] Notes, July 5, 20, 1928; autob., 121, 2:38, 94; and letters, Aug. 14, 1928 (quoted), Aug. 25, 28, 1928.

drowning man of wanting 'sympathy'. I loath this need of help—loath it—but I've never loathed any craving of mine for 'sympathy', for I've never craved 'sympathy' " (1925).[148]

Undoubtedly there were, in the early home life, influences toward self-centeredness. But as for the notion that "the phobia satisfies a desire to appear 'different', as a genius and an afflicted genius", how can we explain "the *profound urge* (aside from practical policy) to be ashamed . . . to conceal it even when concealment was futile . . . for many years"? "I feel no perverted sense of distinction, as if it were after all a proof of superior imagination and nervous 'sensibility'—an 'affliction of genius'. . . . I have no desire to be reputed queer or 'different'. . . . Furthermore, I know, first-hand, too many cases of phobia in men and women of the most matter-of-fact mentality." [149]

"Neither have I *blocked* cure by *wishing to stay uncured in order to write this lugubrious book:* the profoundest scientific ambition of my life has been . . . to write my life-story with a culminating chapter of complete victory over the phobia . . . a profound artistic ambition too, for art craves the grand finale or at least a last note of quiet victory". For that matter, "My *vanity* has all been enlisted in the effort to get well, that I might help to show what one can do in assisting by self-cure. My *vanity* has all been *there,* vanity of self-help and of scientific knowledge. My urging a *record* of non-cure is social—human—scientific (motives certainly natural enough). Otherwise . . . as an uncured case I'd *especially* want my *name* and *personality* eliminated from the report." (The suggestion that *The Locomotive-God* is only a product of the literary imagination has been given *some* answer, though no complete or adequate answer, earlier in the present paper. Further, "Adler of Columbia and Driesch of Leipzig have accepted . . . the objective reality of the findings"; and "Freud himself wrote me, even while mounting his own father-complex and his Oedipus on the boiler of my Locomotive-God", expressing astonishment at the memory material . . . recovered.[150]

And "the phobia has never been necessary to excuse me from disagreeable tasks otherwise beyond my ingenuity to escape". "I know perfectly well [also] that there *have been* times when

[148] *L.-G.*, 409; quoting autob., 196; and quoting notes Jan. 31, 1924, and Jan. 13, 1925.

[149] *L.-G.*, 48, 103, quoting 409; and quoting autob., 196–197.

[150] Quoting *L.-G.*, 415, Addenda II (5f), a note of Mar. 26, 1925, and *L.-G.*, Addenda II (4e).

I have had some of my serious attacks as reprisals; but I *cannot* see how this is true any more": actually, "the phobia has not served . . . to avenge me on my enemies . . . nor to mortify with chagrin the blundering friends . . . for I had it (with analogous symptoms) long before they blundered". No, "I have unearthed many subconscious purposes in my mortal conduct, some of them contemptible enough. But negatively considered, neither my co-investigators nor I have unearthed anything even by long and direct probing, that remotely suggests subconscious purpose in my phobias. . . . My mature mind is clearly getting nothing out of them but handicaps (even aside from all phobic suffering): they have deprived me of normal sonship and husbandhood and of fatherhood altogether; . . . they have kept me from burying my dead; . . . conventions . . . a hundred lecture invitations . . . calls from universities . . . compelled me to decline an invitation from Harvard to come back and deliver the Phi Beta Kappa poem . . . and the importance of prestige; . . . a thousand simple pleasures; . . . Iceland . . . sagasteads . . . Germanic dialects . . . sunny Spain . . . intoning the verses of 'The Cid' . . . proving the metrical pattern . . . from old Germanic sources."[151]

3. *Further Hypotheses*

Is there then something more not yet discovered? Leonard has raised this question too, although somewhat inconsistently with certain statements. For example: "I have, I repeat, certainly found the cause"; "I cannot name or guess any important complex or other factor still buried". And "all methods ever suggested . . . have been tried—*and tried*. No results. It's as if there were something *positive*. . . . The only *something* I can name at all [1925] is the Buried Memory—still buried as anything reëxperienced . . . the unrelived [though abstractly remembered] part of 1878. . . . For the original *central* emotion has not even yet [1928] been relived. . . . I'd be glad to bear any expenses (travel, fees) of a professional consultation [on your part] with—[1924] . . . Does he believe the cure is held up because of still defective recall? Do you?"[152]

[151] Quoting *L.-G.*, 409, and a note, Jan. 31, 1924; notes, May 5, 1923, Jan. 13, 1925; and quoting *L.-G.*, 409, 408, 119, 426, 427.

[152] Quoting *L.-G.*, 406, 413, a letter of Nov. 21, 1925, *L.-G.*, 410, Addenda II, last paragraph, and a note of Feb. 22, 1924. Cf. similarly *L.-G.*, 390; letters, Nov. 21, 1925, July 18, 1926, Apr. 28, 1928.

Another note reads: "I am utterly stalled. The whole mechanism *seems* clear . . . yet no release. Am I self-deluded? Is it something utterly different—some guilt? sex? or generalized infantilism"? There is certainly *"something more unresolved"* [1926]. Later, as we have seen, the father-complex has entered the picture. A follower of Rank suggests too that the traumata *previous* to the locomotive have been neglected. Perhaps. Anyway, "In matters pertaining to himself the cleverest . . . may be rendered stupid by an affect".[153]

Or should we interpret the whole neurosis along essentially different lines? A number of these lines seem worthy of attention.

One reader thought "he must be lacking in courage". More specifically, another concluded that "he must have been nervous to begin with". Similarly, "He neglects the enuresis as an important indication of instability". (He replies that his school "disgrace" "caused, rather than was caused by, fear".) "He must have had an unstable heredity: we need to know more about his ancestry than he gives in his book—or we can read between the lines there". The present writers feel that this point may well be urged, not as *the* explanation necessarily, but as a factor in his case.[154]

Another suggestion is that "he is a psychotic"; a view implied in the remark of a professor of neurology: "I have read *The Locomotive-God*. Isn't it queer and pathological?" If a psychotic element or tendency is to be found in this case (and some would say that at least a tendency toward psychosis must be recognized in every individual), it may be found perhaps most strikingly in Leonard's *complete blaming of other forces than himself* for his present condition, and in his persistent refusal to *acknowledge the phobia as a part of him.* These points should be discussed, of course, without at all implying that "he is to blame" for his neurosis. They do however imply, ineluctably, a great ego-preservation motive.[155]

The layman's dictum, "He has a persecution complex", is at least suggested by a number of facts. In the first place, our subject admits no ancestral or innate defect; he believes he was

[153] Quoting a note of Jan. 1, 1925, *L.-G.*, 416, and notes of July 5, 1928, Dec. 30, 1924. Cf. also *L.-G.*, 21–22.

[154] Quoting notes of July 5, 21, Aug. 23, 1928, and a letter of Feb. 24, 1927; referring also to a note, Jan. 30, 1924; autob., 149; letters, Nov. 30, 1922, July 27, 1927, July 10, 1928; and *L.-G.*, 18, 25.

[155] Quoting a note, Aug. 23, 1928, and a letter, Sept. 22, 1927. Cf. letter, Aug. 25, 1928. Cf. also Notes 71–73, 85–102, 145–150, *supra*, and 156–158, *infra*, with the text accompanying; and *Two Lives*, 11–17, *circa*, 19 ff., 35–68.

*normal* before the locomotive fright. And it is this great fright to which he ascribes most of the explanation of his trouble; as the title of his book indicates. "We *all* have general 'infantile' attitudes—were all 'mothered' ", for example; "but not all have had terrific scares and suppressed scares". "That particular afternoon changed my whole life." Yet this explanation involves blame, and very great blame, for his mother: while recognizing her care to have him "get used" to the fearsome engine at once, he detects a sense of remorse for her carelessness in the fact that she forgot ("suppressed") the incident for a time, and in her failure to understand his later frights in terms of that one. In the same way he explains the fact that his teacher of seven years later did not remember, forty years later, his urinary catastrophe, that "distressing experience, so perilous to her peace and reputation and career at the time" (in that she refused to "see" his hand raised so soon after the opening of school).[156]

Similarly: he hated his mother for bungling his sex training; though keenly aware of much that was good in his parents' education and care of him, he realizes as keenly that in some ways they are responsible for giving him too much care; he resents the way they shifted the battle of earning a living from themselves to God and so to the son's own shoulders; in school days, "it ate down into his sullen heart" that none of the family's well-to-do friends and relatives saw their social responsibility to enable him to continue in school (though he felt some humiliation when he accepted help in college); he blames, bitterly, the mob (in his present town), for precipitating his break-down; he blames, with astounding bitterness—far more than appears in the book—the "meddlesome friends" who sought to trick him into greater distance from home (with a phobic set-back as the result); he blames any friends who fail to fit in most therapeutically with his regimen; he holds his analysis accountable for the exacerbation of his trouble;—all of which is perhaps implied in his retrospective remark, "My father's face is . . . a kindlier face than the years are ever to carve out for his childless son".[157]

There is much kindliness and sympathy in our subject's character, of course; and much of it is of the Spinozistic sort. At no

[156] Letter, Feb. 24, 1927; notes, July 20, 1928, Apr. 27, 1923, Jan. 20, Feb. 22, 1924 (quoted); *S. E.*, 137; and *L.-G.*, 7, 15, 16–22, 25, 26–27, 34, 35, 57, 74, 75 (quoted), 354, 356, 406, 413, 424.

[157] *L.-G.*, 49, 105, 23, 48, 20, 21, 38, 25, 120, 165, 297, 356, 364–367; autob., 131, 184–189; note, May 5, 1923; letters, June 24, July 23, 1928; Notes 96, 121, 122, *supra;* and quoting *L.-G.*, 15.

time, for example, have we found him other than appreciative of the efforts of any of his therapists. And it should be observed especially that we have seen him surprised sometimes at the unreasonable intensity of his own blamings; just as too, we have found him ready to admit such faults as conversational arrogance and ego-centricity. Furthermore we have no norms for the sorts of blame of which we have been speaking! Yet the effort here has been to marshal the blamings that might relate to this psychotic test; and some effort must be made to evaluate them, as will appear in the sequel. As for the more peculiarly psychotic phenomenon, "projection", we have found no convincing evidence; though a part of his blamings, mentioned in the preceding paragraph, and a part of his dislike for his mother, may be owing to this mechanism (in the latter case, through some similarity of personal traits).[158]

The other "psychotic" point, that he refuses to acknowledge the phobia as an expression of *himself*, has been suggested previously: "Such a complex is like a cancer." Accordingly, "it is not a form of insanity any more than a pain in the stomach would be. It may, like a fierce pain, loosen the powers of self-possession, and 'drive you crazy' that way; . . . but it is not madness. You always know it is an alien thing. . . . The phobia is a sort of complex sufficiently independent to be a type of disassociated personality." More metaphorical statements, such as "*The Locomotive-God* . . . has been Lord of my Fears; but he has not been Lord of my Life", and "My nature is the same as when He first bore down", are only metaphorical, and serve merely to emphasize the distinction Leonard urges between himself and his phobia; as when he continues: "He [the God] has not unmade my essential temperament and character. . . . He has disturbed my temper and my emotions, but they were and are mine, not his; he has distorted my activities, but I evaluated and used the distortions." More desirable statements (from the psychotherapic point of view) are these: "Why not, then, the cure? It must be for this: I have not mastered the cause. I have seen but not overthrown the God . . .: the infantile experience has not been completely relived and *assimilated and reset*" (these italics ours).[159]

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[158] Letter, Nov. 30, 1922.

[159] Quoting the autob., 148–149, and *L.-G.*, 424, 406, and 413. Cf. *L.-G.*, 7, and *S. E.*, 137.

Incidentally, as Leonard suggests, it seems very reasonable that "phobias are responsible for much of the belief in bewitching and bedevilment of all past ages". In his own case the "chronic sense of frustration and *alien*-control" has been such

4. *Psychoanalysis Reciprocated: A Point for Psychotherapists*

The ancient Egyptians are said to have exchanged places with their servants for a week every year—doubtless with most beneficial results sociologically. It seems reasonable that a similar arrangement would be valuable for psychotherapists and their patients. Leonard has made an opening by the following significant contribution.

Urging, with respect to the present paper, "You will try for elimination of scientific prepossessions and interpret on the basis of actual phenomena", Leonard notes further that "those friends who say I don't want to get well *irritate* me—but why? The irritation need be no proof that they've hit a subconscious truth. They irritate me because they have such an easy time of it—because their wisdom is so ready and so cruel, for it *really* implies *blame* (it is, too, a washing their hands of the necessity of concerning themselves further about me)." "The psychoanalyst [similarly] makes it too easy for himself and his own human fallibility who can always retort upon his patient—especially a patient who is objective and informed and scientifically schooled—'Your very doubts as to my statements veritably prove the truth of my statements'. . . . There remains the possibility of such a thing as an objective scientific discussion . . . even between the patient and his physician". Besides, "Let it be appreciated as a scientific fact that I have *perpetually* hoped, have perpetually striven in the conviction that psychoanalytic effort would bring possible results. . . . The continuation of the neurosis is NOT due to a negative attitude."[160]

"The explanation of uncured cases as due to inner resistance . . . subconscious wish . . . *may* be sound—but scientifically has no claim unless possible evidence (aside from the mere fact of *non*-cure) is adduced from the patient's subsconscious. Otherwise the explanation is on a par with the alibis of the miracle-worker or faith-healer who explains his flukes as due to lack of faith on the part of those for whom he is performing." ("The family doctor can blame only the apothecary.") "The fact is, too, the current scientific picture is distorted. We hear only of *cures*

that as he says, "given a superstitious age"—or an unenlightened mind— "I could easily find overwhelming evidence in myself that I am under some alien and malign influence, conjured up by one of my enemies; or that I am possessed of an evil spirit, or a legion of evil spirits, determined to drive me back and keep me back within a charmed circle" (Autob., 148, 139, 148, and note).

[160] Quoting a letter, Nov. 21, 1925; a note, Jan. 13, 1925, the autob., 2:93, and a note, Feb. 22, 1924. Cf. note, Mar. 28, 1925.

in the psychological journals. . . . What a scientific farce chemistry would be, or philology, on that basis!" [161]

5. *Concluding Interpretation*

The comments above cited are eloquent of the diversity of attitude in psychopathology today. In the light of them, and in view especially of the complexity of Mr. Leonard's life, we offer our own interpretation as tentative only.

During the early weeks of life, all babies evince a diffused responsiveness to stimulation; but from the first day characteristic differences in this generalized behavior appear. Some infants exhibit an active and varied interplay with the stimulating situation; while some at the other extreme of the scale seem to react inwardly rather. Too little is known about these differences to describe them adequately; but in later life, when they show with more detail, the one extreme group (a kind of extraverted type, as Jung has labeled it) displays an overt and effective activity by which it masters the stimulus or makes a positive adjustment to the stimulating situation, while the other extreme group (which we may refer to as *introversive*) is more liable to react by experiencing and elaborating upon the stimulus instead of controlling or adjusting to it overtly. In other words, the introversive type is comparatively over-receptive and under-effective; as it inclines to responses which are implicit rather than explicit. Thus we may say that one type *affects*, while the other (our introversive type, represented by Leonard) *is affected by* the situations of life.

This difference naturally tends to increase; as to an extravert perception is determined more by the nature and intensity of the external situation, but to an introversive individual, more by what it evokes or constellates within his own organism. This is true especially if the introversive individual is endowed like Leonard with high intelligence which makes for a complex inner life. For such an introversive person the inner proliferations of a simple stimulus are often extensive and correspondingly hard to predict. For such a person, too, any threatening situation is likely to be peculiarly devastating, both because of his tendency to elaborate upon the stimulus, and because of his store of ingrown responses, redintegrations, frequently of the fear-avoidance type, which are his most ready reactions.

His social adjustments are similarly limited. The standards

[161] Note, Mar. 26, 1925 (quoted); *L.-G.*, 410, 414 (quoted) and (quoting) a note, Apr. 8, 1925. Cf. G. V. Hamilton, *Objective Psychopathology*, 205 (1925).

and expectations of his fellows irritate the turned-in person; seeking in compensation to assert the importance of his own ideals and values, he is taken as queer and egotistic; finding it hard to make his subjective experiences intelligible to others, he fails to win their understanding and good will; preoccupied with his inner world, hampered by the ineffectiveness of his overt responses, he is often exploited in practical ways, a victim of others' aggressiveness and misunderstanding; and valued less in others' eyes, he values them less in turn, while feeling himself either inferior or superior or both. No wonder such a person is fain to keep within a "shell" where self-protection and interest in self become dominant.[162]

It may well be true, as Leonard thinks, that the locomotive-fright he suffered at the age of two years and four months altered his whole life; but we cannot believe, as he seems to infer, that *any* child would have reacted in the same way. With most children the situation would have set off a few simple, comparatively obvious responses, such as running, screaming, crying. With his distinctively introversive temperament, that situation aroused a complicated affective-perceptual pattern ("Caterpillar", "Grasshopper", "Father", "Face of Demon-God") which involved his whole being in a turmoil of terror and left its mark on all his later fears. Even that first great fright implicated his general home attitude, with its elements of duty, justice, mother's care, father's position of sanctity and ideal superiority, and his own central place in all of this: a home attitude which fitted into his temperament peculiarly, it would seem, to make him subject to trauma upon such an occasion, especially when he was disobedient in getting near the track.[163]

Within a few months he showed fear of cars, bells, bands, any form of *noise*. This was due not to oversensitive ears, but to the inner reverberation: "I can almost say that I have never been really afraid of anything in life, except the Locomotive-God." A cow (familiar object) puts her head through an open window and moos at him. She does not startle as a cow; she terrifies as an onset. The town band terrifies him, not as a group of men,

[162] Cf. C. G. Jung's treatment of "the introverted type", in his *Psychological Types* (1923). Pavlov's observations of "inhibited" dogs may be relevant also.

It should be noted especially that by our use of the term "introversive", which seems more free from doubtful connotations, we do not mean to imply a bi-modal or even a single-scale distribution of human beings. We are thinking merely of one extreme type. Cf. also Notes 154–156, *supra*.

[163] *L.-G.*, 17, 16, 35, 18, 15 ff., 47, 112, 359, 191, 22, 104.

but as a menacing uproar sweeping toward him. But his next major episode is at the age of nine. One morning in September, 1885, at 9:30, our subject raises his hand for permission to leave the schoolroom; it is still an hour until recess and he cannot wait. But the teacher for some reason ignores his mute appeal. First one hand then the other upraised, his lips drawn more tightly, he watches the clock-hand slowly advance. Not once in that hour of increasing pain is he able to *act*, to overcome the social restraints, to do something beyond dumbly waiting for the dénouement, to compel attention by going up and informing the teacher of his misery (which is perhaps what she expected him to do if he really needed to leave). Such overt passivity may be due to no lack of drive, but to the fact that his energy is consumed through inner processes. He is restrained by a shell of inhibitions. Here again the traumatic situation is not wholly due to inattentive teacher or the taunting mob that pursued him on the playground a few moments after his mortification in the classroom; the trouble lies in part, we assume, within himself.[164]

His sex-life fits well into the developing picture. His introversive tendencies were unwittingly utilized and reinforced by his mother, who regularly sat by his bedside in the dark, "whispering deep things" before he went to sleep. Later as a freshman when "jollied" about a girl, he turned white as death; and when he might have enjoyed a liaison with a respectable girl "old enough to take care of herself (and me)", it was his "unmasculine" timidity, rather than principle, which really overpowered his curiosity and desire.[165]

And yet his youth was by no means one long series of fears. Most of the time he was happy and content. He had many activities, interests, and adventures even, which were characterized by intellectual curiosity and zest, mental and physical vigor, to the apparent exclusion of fear. Some of this wholesome activity may

[164] *L.-G.*, 104, 27, 28, 56 ff.

A special factor is suggested by a statement of G. V. Hamilton's. According to this author, in cases "where the patient's ability to recover a detailed memory of the events which belong to an amnesic gap suggests that the inhibition of psychical reaction to the fear-inciting situation is *postcritical*, a complete and easily accomplished cure is to be expected. [On the other hand] a suspension of psychical reaction *in the midst of a terrifying accident* usually makes for a more difficult therapeutic situation . . ." (though a case of this sort cited by Hamilton seems to have improved with practice). Our subject is clearly in the latter group, on the basis of his memories which are entirely uninfluenced by any knowledge of this observation. (G. V. Hamilton, *Objective Psychopathology*, 131–132 (quoted), 124 (Mosby, 1925). Cf. Leonard, *L.-G.*, 64, 299–306, 421.)

[165] *L.-G.*, 104, 110; and Notes 18, 137–139, with their text, *supra*.

have been compensatory; but we take it rather as normal, and as a warning against undue generalization about personality types: we must not assume that "introversiveness" as a predisposition means "introvertedness in general" as an accomplished fact.[166]

His course in high school opened with great promise, but was rudely interrupted when his father was forced by poverty to locate in a remote village, lacking the educational opportunities of his native Plainfield, New Jersey. Despite his abysmal despair then, did he act; did he seek to earn board or room with kinsmen or friends in Plainfield until the course was complete; did he or his father recognize that eager ambition makes ready friends; did the inner turmoil lead to direct adjustment? No, characteristically; the loss "ate down into my sullen heart", he says. The next two years he was reserved and rebellious, cursing the "God-forsaken hole" where he lived, and writing verses of Byronic theme and manner. Nevertheless he planned and achieved a commendable program of study at home; he got into Boston University and worked his way through college there; and a few years later he won a travelling fellowship and sailed joyously for Germany.[167]

The feeling of freedom and inward security which Leonard notes particularly of this trip he suggests may be a kind of compensation for his still latent timidities. This may be partly true; but in addition to his natural joy in intellectual interests, some explanation suggests itself again in the principles we have educed above. For the first time in years, our subject is *free:* free of money-worries, free of the irksome pressure and chaperonage of family and friends. He can now view the changing scene from a new vantage-ground. He is *not yet* afraid merely of being too far from a given center of safety.[168]

Returning to America, Leonard begins a dissertation at Columbia on Byron (his adolescent ideal), still gazing sentimentally back to the Rhine and his German masters. Then a proposal of marriage to Annie, longtime friend, who turns him down. Desperately he pleads to remove the negative; then on the counsel of another, writes her an "ultimatum", whereupon she ends their relation forever. Thereupon follows an "acute and unmotivated panic, consciously identical in tone and behavior with the phobic seizures of later years, and subconsciously identical . . . with the seizure in infancy before the locomotive". He burns too with remorse and hatred in his lines:

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166 *L.-G.*, 41, 77, 88, 48, 97; *V. M.*, 40, 59–60; and Note 46, *supra.*
167 *L.-G.*, 119 ff.
168 *L.-G.*, 202 ff., 211–216, 331, 333, 412.

"Thy treachery fouled my soul's last livelihood,
And poured the poison in my cup of gall.
O how came I to stoop to loving thee . . .
I that had never stooped before to shame?"

a hatred which, he realizes later, is blind resentment against the repelling Locomotive-God whom Annie has unwittingly represented.

He goes madly to and fro seeking distraction and abandoning his work; and finally he flees back to the Rhine whence he had returned but a few months before. Thus his reaction to Annie's refusal carries on the tradition of his earlier crises. Slowly, unconsciously, he has allowed his affections to be entangled with his environs (a violation of his type's most sacred principle of self-sufficiency); he has ventured to lean on *one* external thing, and now it crumbles beneath him. All his implicit fear and distrust of the world flares up on this betrayal.[169]

The scene now shifts to Madison, where his peculiar phobia was born. Radical, tumultuous, artistic, poor, Leonard marries a lovely woman of a family that is correct, conventional, proud of its social standing, well to do. Within two years' time this woman takes her own life by poison. There arises immediately a campaign of denunciation, which even today has not wholly subsided, accusing the husband of brutally driving his wife to death. Through this period Leonard was the victim of the most extreme stress, *both from without and from within*. Outwardly, there were the terrible facts of his wife's hereditary taint; her previous attacks of suicidal insanity (of which he was not fully informed at first); her distressing marks of psychopathology which appeared during their married life; her loveliness withal, and her devotion to him and his life; her tragic death; and the whole social situation for him which has been indicated: a cumulative stress which would have made many a man definitely psychotic. From within, there were his temperament throughout all of this; his developed patterns of abnormal reaction; his true and deep affection for his wife; and his in-built ideal for his art and work.[170]

Art and wife have then become his dearest treasures which

[169] *L.-G.*, 235 ff.; quoting from *A Son of Earth*, 25.

[170] *S. E.*, 130; autob., 2:133–181; *L.-G.*, 289 ff., 269 ff., 328, 345, 276; *Two Lives*, 58, 18, 23, 37, 42, 43, 56, 57, 62, 78–82, 59–61; *S. E.*, 84, 88, 91, 125, 126, 131–133; and Notes 61–76, 140, 145, *supra*.

With regard to the previous life of the wife, a sorority sister of hers tells of her tragic though lovable erraticness. "We all knew she was crazy, even then", she says. At that time too "Agatha" used to hold the girls spell-bound with what must have been exaggerated accounts of what had happened in her ancestry. "She was always quite self-consciously 'the tragedy queen', but most attractively so".

he hopes to unite in a perfect harmony; but difficulties increase. Apparently he hopes for a "new start" when the father is gone; but already the fateful choice is becoming all too clear: Ambition or this Wife: one or the other, but not both. Agatha feels it perhaps earlier than he; and by her act "frees" him for his art. But does that solve the inner problem? Of course not; he is now haunted and tortured by the memory of her love and beauty, and by remorse for his own occasional lack of patience with her. But suppose, by an equally sudden and fatal blow, his ambition, his art, could have been stricken down and his wife had remained in all her loveliness; would that have solved the problem? Surely not; he would then have been haunted and tortured by ghosts of his frustrated ambition and creative ideals. The tragedy of Leonard's situation is precisely that under the circumstances, *no real solution was possible:* any way of escape was bound to prove (at least for a time) disastrous; he had so incorporated his conflicting treasures into his own being that if either were thrust out, a gaping wound must remain, and still the conflict would not be resolved.[171]

It may be that if Leonard had been left alone with his grief, he would have worked it through successfully; after enshrining his remorse and sorrow in the verse of *Two Lives* as a final tribute of love to Agatha, he could have turned to the future, a free man. It was, as he says, the mob's attack, which "robbed me of the holy right to an uncontaminated sorrow for my dead. It sullied my grief by precipitating in me a defiant, a consuming resentment." The mob's attack, furthermore, precipitated the present phobia; though it did not initiate the neurosis nor determine its pattern. Even in understanding that attack, however, we recognize our subject's introversive behavior, which must have seemed to confirm the worst whisperings: he was fearsome, remorseful, and distraught; he "lay helpless in the woods and dumb"; or he escaped these moods by absorbing his attention in professional and recreational enterprises![172]

For a long period after his wife's death, Leonard could not leave his home without encountering hostile and averted faces. Hate lurked for him everywhere. A point we have not taken up with him, but which seems reasonable, is that, on account of his remorse over some impatience with his wife, he partly feared the mob as emphasizing an element of truth; just as he *was* a bit negligent (he thought) in getting near the locomotive in the first

171 See preceding note.

172 *Cf. S. E.*, 84 ("O Loved and Lovely"), 88, 125, 126, 91, 131–133; *Two Lives*, 39; *L.-G.*, 299, 297, 290–291; and Notes 88, 54, and 27, *supra.*

place, and negligent again for not having taken care of himself before the school incident. But this time the "Mob's attack" is so diffuse that no ordinary escape-mechanism is really appropriate; and no particular channel of release is yet clearly established, though the old Locomotive-God, Home-Run, system, lies latent. But now comes the *phobic birthday:* the present terror and remorse, by chancing to coincide with reminders (warm day, locomotive, cigar, urination, sense of isolation), stimuli of the earlier pattern of the same emotional flavor, combine to evoke a hallucination of certain features of the original locomotive fright in distorted and magnified form; *his recent emotions and outer stimuli are conditioned into the latent flight-pattern* which is now fully aroused; and the *phobia of distance from home* has him at last.[173]

Consider the schema, incomplete though it is:

| *External situation* | *Emotional situation* | *Pattern implicated* | *Response* |
|---|---|---|---|
| Locomotive<br>Distance from mother | Terror, guilt, shame | (Introversive tendency)<br>Parental care | Flight to mother |
| School mob<br>Distance from home<br>Bell, noise | Shame, guilt, terror, resentment | Locomotive-God system | Flight to home |
| Annie's refusal<br>Distance from congenial atmosphere | Terror, remorse, shame, resentment | Locomotive-God-Mob system | Flight to Germany |
| Wife's suicide<br>Hostile society<br>Distance from congenial protection<br>Bell, noise, etc. | Horror, grief, remorse, terror, resentment | Locomotive-God, Mob, Annie refusal, system | Flight into home zone |

Leonard made especial use of the principle remarked by Tennyson, that

> ". . . For the unquiet heart and brain,
> A use in measured language lies;
> The sad mechanic exercise,
> Like dull narcotics, numbing pain" ("In Memoriam", V);

only Leonard put his verse to humor:

> "Well, here's the Book of Fables, done
> Whilst I had neither star nor sun,
> And little cause, good friends, to jest—
> Except one cause, and *that* the best. . . .
> [For] . . . in the major griefs and pains
> Afflicting homo sapiens,
> We lift our heads, our eyes are dry,
> We stalk about, and we defy—
> We laugh—we laugh! 'Tis no pretense:
> Self-preservation and defense
> It is indeed. So desperate
> In this grim world is now our state
> That but one tear were death and date.
> A major case?—I still am dumb;
> But let that pass: my time shall come!" (*A. & H.*, 157–158; or *S. E.*, 91;—described in autob., 113–114.)

Such escape from painful situations by irrelevant occupation is not unknown to psychopathology. Extreme instances are cited in Ernst Kretschmer, *Hysteria*, 16–19 (Nerv. & Ment. Dis. Pub'g Co., 1926).

[173] *L.-G.*, 299–308, 406.

Now as a result of staying at or near his home, our subject enjoys a "center of safety" from the mob, even from that body's vestigial reaction of contemptuous pity; for that matter against any form of attack upon himself, he is always near the symbol of childhood's protection, the roof-tree, with its woman's care;[174] his imprisonment there should more than expiate any remorse he still has for having chafed under the beloved wife's psychotic limitations; there too he is less subject to the habit of worrying about what might happen at home;[175] there he considerably controls the behavior of another person, his second wife; in this control he may be taking subconscious revenge upon his mother and upon his teacher, whose negligence he blames so bitterly, also perhaps upon Annie, for her lack of consideration;[176] he remains central to the situation;[177] he attracts attention, lately scientific attention; the limitations set by his disorder have encouraged him to make a name for himself in a new field of learning, psychopathology;[178] and any truth in the view that neurosis favors art is given its full chance. . . . Yet we believe that all of these factors have played only a minor part in the continuation of the phobia.

The major factors, we suspect, are in his native temperament, in the shocks, circumstances, and development of his growing years, in the irreconcilable conflict of his first marriage, and in the brutal stress of that wife's death. We think too there may be "something more" to be analyzed: possibly even a childish sex-play motive toward his mother, or a later inclination toward her put back into the first traumatic memory, which loaded the locomotive with his father's punishment—a Freudian interpretation which would provide some persistent motivation for the phobia, in that being sick now would mean symbolic guilt of the desired sin and at the same time satisfactory punishment for it, satisfaction both subconscious and conscious;[179] but we do not know about this.

As for explanation of the failure to effect a cure, one of the writers thinks that the original phobic pattern throughout the years has become a dynamic system so overpowering that the

174 Cf. *S. E.*, 123.

175 Cf. Note 26, *supra*.

176 Cf. Notes 3, 156, 157, 169, with their text, *supra*.

177 "The self-reference complex (personal, family, or professional) proves to be the most effective of the disturbing complexes" (Sigmund Freud, *The Psychopathology of Everyday Life*, 52; Macmillan).

178 Cf. the text adjacent to Note 100, *supra*; also *S. E.*, 135n.

179 Cf. Note 141, *supra*.

analysis, instead of effecting an inhibition of that phobic system by the rest of the personality, has enabled that system to dominate the personality instead. The other writer is not prepared to accept this interpretation, as he does not see how a fear system could tend to perpetuate and enforce *itself;* fear being essentially a negative reaction, apparently lacking such an inner urge as characterizes, for example, a sex system. The writers agree, however, that the extended analysis, by tracing out the earlier fear pattern in full detail but without successfully *modifying its emotional tone* on the one hand and without fully *mastering the present situation* on the other, may itself have made the subject worse. In any event, reasons for the failure of the analysis may be found in its possible incompleteness; in the fact that it was not done by one of the great masters (Janet, Freud, Prince) whose expert authority as well as knowledge would have been more helpful to Leonard's independent personality;[180] and in certain special conditions inherent in the analytic problem.

These special conditions include the great shift of environs which occurred for Leonard between his childhood and his maturity; a shift which hindered that natural recall and integration of early incidents which might have occurred in more constant surroundings. Further, our subject's main phobia was active, after several premonitory outbreaks, over a period of eleven years before the serious analysis began; and the analysis was not begun until he was forty-seven years old. Also, the social situation has not been a very happy one, and it was not found feasible to isolate him in a sanitarium or elsewhere during a period of readjustment. Nor was he put to any financial outlay as a stimulus to recovery (except for the loss of his creative time—yet *The Locomotive-God* has gone into its second printing). Finally, Leonard's mentalistic philosophy, which dignifies the processes of consciousness and feeling as such, and which assimilates the individual mind to the substance of the universe, may have interfered at a number of points with his recovery.[181]

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180 *L.-G.*, 324; *S. E.*, 137; and Notes 96–102, 108–114, with the text accompanying, *supra*.

181 Note, Apr. 15, 1924; cf. English Bagby, "The Etiology of Phobias", this JOURNAL, 17:16–18 (1922), or *The Psychology of Personality*, 44–50 (Holt, 1928); Martin W. Peck, "The Meaning of Psychoanalysis", *New England Jour. Med.*, 199: 814–824, Addenda ("On the whole, after the first half of life, the method is not advisable") (1928)—though one of Bagby's cases found a cure at the age of fifty-five; Leonard, *L.-G.*, 297; letter, July 26, 1928; autob., 114–115; Pierre Janet, *Psychotherapy*, 47–51 (Macmillan, 1924); *L.-G.*, 425–426; *V. M.*, 83, 85; and cf. Gordon W.

It still seems possible that, aided by an ever-growing understanding from without, Leonard may achieve that steadied insight which holds his freedom. Quite possibly this outcome depends partly upon his ego now. It is easy to slip from egocentricity into egotism; it is hard to reach that height of maturity, the realization that the ego, instead of being the most important thing in the world, is really in the way. Life is found by losing oneself in it. This is just the activity which neurotics find most difficult—often partly as a result and partly as a cause of their neuroses. When found in artists (and scientists), this difficulty, the avoidance of egocentricity, becomes enhanced by the presence of an audience. If the artist can say truly,

"To breathe my loss is more than fame,
To utter love more sweet than praise",[182]

his position is secure; but when he considers the question,

"What hope is here for modern rhyme?"[182]

both his artistic integrity and his mental health become more liable to damage. Observe the change that came over Tennyson with the publication of "In Memoriam"—an event which placed him "at once in the foremost ranks of English writers of the time". Thereafter, we are told, "as a poet he took himself with entire seriousness; his was a conscious voice, a conscious inspiration; and as a prophet he took himself, as England took him, solemnly. It is that Tennyson who cannot satisfy a later age."[183] As a person, also, he "loathed 'the pen-punctures of those parasitic animalculae of the press'", and became neurotically unreasonable about any strictures upon his work.[184]

Leonard's gifts are great;[185] and his understanding of much of the world is profound. We feel that besides his admittedly fine pieces, there is a network throughout his writings that is fundamental. The danger is that the in-grown form of much of

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Allport's series of "Questions . . . on *The Locomotive-God*",—referred to in his article in this JOURNAL, 24:24 (1929), Question 128: "*What is the relation between a man's philosophy of life and his personality?* (This final question is perhaps the most significant question which could be asked in the entire field of the psychology of personality.)"

182 Tennyson, "In Memoriam", LXXVI.

183 Marjorie H. Nicolson, Editor, *Selected Poems of Alfred, Lord Tennyson*, 11, 18 (Houghton Mifflin, 1924).

184 Harold Nicolson, *Tennyson*, 201–202 (Houghton Mifflin, 1923). Of course Tennyson's sensitiveness may well have had earlier roots too. Cf. the same author's pp. 203, 302.

185 The Spanish academy is now publishing his paper, in Spanish, on the meter of *The Cid*, "really a remarkable achievement", writes a colleague of his. ". . . It is hard to give people who know only his books the least idea of his many-sided achievement" (letter, Aug. 23, 1929).

it can become so marked by self-consciousness as to itself hurt the worker as well as the work.[186] If Leonard can understand himself so fully as to lose himself, he may gain a new health, a health in which he can enjoy an objective release of his powers.

[186] Cf. Note 145, with its text, and Note 177, *supra*.

# REVIEWS

FEELINGS AND EMOTIONS. The Wittenberg Symposium by Thirty-four Psychologists. Edited by Carl Murchison. Clark University Press. Pp. 417—appen. 29.

This is a book which should have been the most important work on emotions in recent years. But it is far from being any such thing. It is a collection of articles on emotion by thirty-four psychologists. Every one of these men is a famous name in psychology or allied fields, but only three or four are distinguished for their researches on emotions and the contributions of these men in the present volume are necessarily more limited in scope and content than their published researches on emotion to be found elsewhere. Only one psychologist out of the entire list, Carl Jorgensen, presents any constructive suggestion for development of emotional theory; and only one writer, Henri Pieron, presents any organized basis of actual facts for psychological treatment of the whole field of feelings and emotion.

There is a notable absence of articles by the younger generation of psychologists who have made most of the original contributions both experimental and theoretical, to this field during recent years. The book, as it stands, is a rather complete compendium of different academic views and approaches to the psychology of emotion.

The book is divided into eight parts. The first four parts of the book deal with problems of emotion proper, and occupy 321 pages. The last four parts of the book occupy altogether 96 pages, and deal with various applied problems of feeling and emotion. The most practical way of reviewing the entire collection of articles would seem to be a brief summarizing of each of the 27 articles which comprise the main part of the book.

PART I—GENERAL PROBLEMS IN THE PSYCHOLOGY OF FEELING AND EMOTION

1. Madison Bentley—Cornell University

Mr. Bentley asks the question—Is emotion more than a chapter heading? And after summarizing a number of things which emotion is not, he answers "I don't know".

2. Dr. Joseph Jastrow—Wisconsin University

In a witty and literary paper Mr. Jastrow asserts that "the place of emotion in modern psychology is in helping us to solve the problem of how to harmonize the life of feeling and thinking in one living symphony".

3. Charles E. Spearman—University of London

Mr. Spearman gives us a brief example from his own researches of "a new method for investigating the springs of action". This method,

of course, consists of the "novel method of correlation". Spearman finds that "desire to excel", as estimated by subjects themselves and by observers, has a "significant positive correlation with the good qualities" in the same subjects as similarly estimated. Webb's second general factor "of wide generality" is endorsed, thus adding to Spearman's intellective "g" factor the volitional-affective general factor "w". The reviewer greatly admires Mr. Spearman's mental gymnastics.

4. F. Aveling—University of London

In treating the "emotion, conation and will", Mr. Aveling discovers from introspective analysis that true emotion contains "massive and unclear sensation", and also "conative impulse", the latter invariably consequent upon the former. From fairly well controlled experiments Aveling discovers that bodily changes of emotional nature as indicated by the p.g.r. "almost invariably take place *after*" the emotion is introspectively reported. Mr. Aveling reaches the anti-James-Lange conclusion that "the somatic resonance can, therefore, neither be the antecedent nor the concomitant of the experiences related in the introspection. It can be only the consequent".

5. F. Krueger—Leipzig University

Mr. Krueger argues at length the gestalt premises in general and concludes that "the essence of feeling" is "the quality of experience of this total whole (erlebnisqualitäten des Gesamtgangen)". Mr. Krueger further maintains that the behavioristic attempt to relate changes of experience of an emotional nature to unequivocal varieties of physical stimuli can never be taken seriously. Of course the structural unity of the total experience of which feelings represent the inner aspect, is emphasized. And the point is made that any attempt to dissect this "total-structure" is functionally in discord with it.

6. F. Kiesow—Turin University

He maintains that the "feeling-tone" of sensation is a purely subjective something which accompanies the sensation and which is yet essentially different from it. Displeasure is, for instance, "clearly distinguishable from the actual pain quality". Mr. Kiesow's conclusions are based upon introspection and logical analysis of the literature.

7. Margaret F. Washburn—Vassar College

Miss Washburn propounds a motor theory of the relation between emotion and thought. It is not clear just what an emotion is, according to this author, since she assumes "that while consciousness exists and is not a form of movement, it has as its indispensable basis certain motor processes". In short, though we do not know what emotion is, it is some sort of motor phenomenon. If the emotional motor process conflicts with thought which is also a motor process, then the two will tend to be mutually inhibitory; and vice versa. Dr. Dunlap, in the discussion following this paper, quotes Miss Washburn's statement that "people cannot keep on trying to think about topics of which they have no knowledge", and exclaims "Would to God that were true!"

8. W. B. Pillsbury—Michigan University

Mr. Pillsbury in discussing "the utility of emotion" assumes that emotion accompanies only "those types of behavior which have not become sufficiently automatized to be reflex". By emotion he means "no more than the sum of accessory internal responses". "The utility of emotions and affections connected with terminal response" is that they "are the fundamental determinants of animal and human conduct". Emotions consisting of neuro-muscular and neuro-glandular discharges can be shown in ordinary cases to intensify the original action.

9. Ed. Claparede—Geneva University

Emotion is nothing more than a consciousness of a form, a gestalt, or a consciousness of an attitude. The emotion contains in itself its own significance. Emotion is a mixture of adaptive and unadaptive reactions in which proportions vary, and in which the two parts habitually succeed each other. M. Claparede reaches this conclusion solely by means of argument and attempted logical refutation of other theories.

10. D. T. Howard—Northwestern University

Another a priori theory of the emotions called "functional". Emotional conduct represents a failure. It is characterized by confusion and excitement which disrupt normal adaptive behavior. Mr. Howard's paper was adequately disposed of in discussion by Professor Hughes, of Lehigh University, who said that Howard's idea of emotion "referred to one class only of what are generally classed as emotional disturbances. We have plenty of evidence of another class of human responses, human activities, which we can hardly deny are emotional, but which, so far from being blurred, are the clearest and most effective responses that human beings make". Dr. Cannon, during discussion, went further than Hughes and maintained that no emotion was without some bodily value in making action more effective.

11. Knight Dunlap—Johns Hopkins University

Mr. Dunlap regards emotion as a "dynamic background". If emotion is a fact and not a myth then it must refer to visceral changes—(Why? we ask—and find no answer from Mr. Dunlap). These visceral changes are *"dynamic"* solely because they possess the capacity for releasing and affecting responses terminating in miscellaneous activity. Visceral content is usually background; external content is usually foreground. Mr. Dunlap admits that "there is no divine peculiarity of the visceral processes themselves which sets them off as emotions in contrast with the external world—rather it is a peculiarity of the habitual pattern of integration which is responsible". Mr. Dunlap offers no proof beyond his own assertion, however, that the visceral processes *are* responsible for emotion.

12. Morton Prince—Harvard University

The question "can emotion be regarded as energy" is answered in the affirmative. Prince defines energy as "anthropomorphically immaterial", its nature unknowable by the objective measures of science. He

offers two facts to back his theory that emotion consists of this type of energy. (1) With excitation of emotion there is discharge of energy to the viscera which can be measured in foot pounds. (2) Discharge occurs synchronously with the occurrence of emotion as long as emotion persists.

13. Albert P. Weiss—Ohio State University

Feeling is the facilitation and interference of new stimulus-response systems with the coördinated activities already composing the individual's existing behavior. Facilitation between new and existing stimulus-response systems gives pleasure, while interference between these two sets of stimulus-response systems gives unpleasantness. Emotions depend upon similar interaction of stimulus-response systems with reference to the particular movements which the individual goes through.

No specific localization or description of the mechanisms for these interactions is suggested.

PART II—SPECIAL PROBLEMS IN THE PSYCHOLOGY OF FEELING AND EMOTION

14. Earl Bühler—University of Vienna

There is a steering principle to be found in the field of movements and this principle is the progression of activity from displeasure to pleasure. Children's movements are themselves endowed with pleasure—called "function pleasure". "Function pleasure" causes repetition, repetition means habit formation and also a progression from worse to better and more effective movements or behavior.

15. William McDougall—Duke University

Feeling and emotion are modes of experience incidental to the striving activities; pleasure being symptomatic of success, and pain a consequence of frustration. Grown men no longer have simple feelings, but always unite the two because they blend past, present and future experiences. These complex feelings are emotions. Complex feelings are dependent upon the development of the cognative functions.

16. Carl E. Seashore—Iowa State University

Phonophotography offers a new and promising approach to the psychology of emotion. Mr. Seashore's argument is based upon the assumption that music and speech represent the most highly developed forms of emotional expression and also the medium most commonly used for expressing affective life. By means of an intricate discussion of wave-forms, wave-lengths and wave-attitudes, Seashore attempts to correlate with these aspects of sound some corresponding range of emotional variety. In the discussion following, Dunlap criticized Seashore's technique by suggesting that while a singer's voice may arouse emotion in the hearer, it seldom expresses her own emotion; and that timbre, which is the best means of emotional expression, cannot be measured.

17. George M. Stratton—University of California

Mr. Stratton maintains that "excitement" should be given a place in emotional categories since it may stand alone and fade away without

passing into any other emotion; it may be the precursor of other emotions; it may be the successor of other emotions. "Excitement", he maintains is a form of emotion existing at an earlier date than other forms and less differentiated than any other form of emotion.

18. Robert S. Woodworth—Columbia University

If we follow the lead of McDougall and Watson and distinguish emotion as some form of activity from overt behavior, then the several distinct emotions are not emotions at all but adjustments for different types of overt behavior. Woodworth's paper is an argumentative critique of any and all attempts to differentiate and describe emotions in terms of objective behavior mechanisms.

19. Harvey S. Carr—University of Chicago

Emotional reactions are those that occur when the organism is unable to respond sufficiently to a highly stimulating situation. They are somatic disturbances reacting in an adjustive manner to the behavior demands of the organism.

20. L. B. Hoisington—Cornell University

Nafe's work is cited as proving that the essential affective quality is a bright or dull pressure of non-specific object reference. Mr. Hoisington believes that bright pressure is correlated with a state of non-contraction of the skeletal muscles; and dull pressure is correlated with a state of non-contraction of the visceral muscles. Experience admits but a single pattern at any one moment.

21. R. H. Gault—Northwestern University

Mr. Gault finds that general unlocalized pleasurable reactions result from tactual experiences where the finger or thumb of the subject was held lightly against the diaphragm enabling him to feel vibrations that corresponded to the voice of the speaker at a distant microphone. The subject did not at once get a thrill out of any movement or tactual quality, but enjoyment followed practice and repeated experience.

PART III—PHYSIOLOGY OF FEELING AND EMOTION

22. W. B. Cannon—Harvard Medical School

The experiments of Bard indicate that the dominating brain center for rage or "sham rage" is located in the posterior half of the diencephalon near the base, probably in the sub-thalamus.

Cannon and his co-workers found that rage persisted in experimental cats after both sympathetic trunks had been removed. Emotion depends upon the discharge of the central neurones in their fated manner regardless of the activity or absence of activity in effector organs which are normally the ultimate recipients of such central discharges of nervous energy.

Cannon concludes that emotional experiences do not arise from changes in effector organs, but rather are produced by unusual and powerful influences emerging from the region of the thalamus and effecting various systems of cortical neurones.

23. Vladimir M. Bekhterev—University of Leningrad

Experimental results are cited proving that the James-Lange theory is not tenable. During fright many different and opposite modifications of the viscera alternately occur making it impossible that any uniform set of sensations could exist to furnish the characteristic emotional quality of fear. Emotions consist of somato-mimetic reflexes conditioned and modified as a result of environmental stimulation. A special conditioned reflex therapy is advocated which Bekhterev claims has been used to eradicate completely stubborn kleptomania in children.

24. Henri Pieron—University of Paris

Action is always essentially affective and the affective impulse prescribes the ends of action. Emotion represents a certain level of intensity of the affect accompanying action. Experiments on crabs and other animals are cited to show that certain actions like amputating a limb to escape, are possible only under conditions of intense emotional excitement. Darwin's utilitarian explanation of the expression of emotion is childish because intense emotions are destructive in their effects upon the organism just as frequently as they are beneficial. Emotion is an excessive discharge of nervous energy and this is useful only in so far as it finds utilization in the given situation.

The intense energy discharge constituting emotion may or may not affect the viscera. But since discharge of this energy into the viscera is usually less impeded than discharge to the skeletal muscles, it is to be expected that visceral expression will be strongest when the emotion is particularly marked. Although Pieron does not emphasize the point, this simple statement of facts probably accounts for the curious insistence with which most psychologists endow the viscera with magical emotional powers despite the paucity of sensory mechanisms therein contained. The diffusion of over-intense excitatory impulses into the viscera under the influence of emotion seems on the whole to be not only useless but harmful. On this point Pieron is squarely at variance with Cannon and Pieron appears to have all the best of it as far as facts and supporting evidence are concerned.

The coördinating mechanisms of the central nervous system supply the visceral energy reserve to the skeletal muscles when needed regardless of the emotional state existing at the time. If the exciting emotional state becomes too intense this coördination tends to break down and oversupplies the visceral reserves, such as adrenalin, blood sugar, etc., which are released serving no useful purpose but frequently decreasing the total efficiency of the organism. Recurrent attempts of biologists and physiologists to explain everything in terms of utility smacks of a religious teleology which has no proper place in science.

Pieron's paper is based throughout on experimentally determined facts of neurology and physiology and shows us how immensely profitable it would be to the psychology of emotion if every psychologist who dabbles in emotional theory would learn enough neurology to study and follow

Pieron's method of approach. This is a very able paper though less complete than Pieron's book "Thought and the Brain".

PART IV—PATHOLOGY AND PSYCHOANALYSIS OF FEELING AND EMOTION

25. Pierre Janet—University of Paris

M. Janet maintains that the essential element of melancholia is "fear of action". By this phrase Janet seems to mean an attitude of checking normal actions and acting in such a way as to escape all action ultimately. He cites several cases of melancholia which justify his clinical analysis.

26. Carl Jorgensen—Copenhagen University

This writer makes the only original and constructive contribution to real analysis of the elements of emotion. "Emotions", he says, "can and do arise without any connection with cognitive elements or sensations". Therefore there must be a fundamental emotion material which is analyzable both subjectively and in regard to its physiological basis into indivisible emotional elements. Jorgensen suggests the following elements of emotion: Fear, happiness, sorrow, want, anger, shyness. The fact that all these suggested elements are undoubtedly complex and the additional fact that Jorgensen fails to offer the slightest physiological basis for his particular selection of elements does not in the least diminish the methodological value of this author's bold approach to the whole field. Chemistry did not progress into a systematic science until elements of matter were sought and found. And the psychology of emotion probably will never progress until emotion elements are sought and found. Four psychological investigators have so far ventured to follow this approach; namely, Jorgensen, Eng, Watson and Marston. And Jorgensen's present offering along this line furnishes the only hopeful touch in the present collection of academic articles.

Displeasure, according to Jorgensen, means the aversion that arises within or as the result of an emotion, while pleasure means the accepting tendency similarly associated with a given emotion.

27. Alfred Adler—Vienna

Herr Adler is not interested in the physiological or biological description of emotion. He is only interested in the goal which emotions or other psychical elements may influence the individual in attaining or failing to attain. Feeling of inferiority and social feeling are connected with and belong to the life plan with which they must agree.

PART V—FEELING AND EMOTION IN CHILDREN

This section is given to papers by Wilhelm Stern of Hamburg, and David Katz of the University of Rostock.

PART VI—FEELING AND EMOTION IN RELATION TO AESTHETICS AND RELIGION

This section contains papers by H. S. Langfeld of Princeton, Erich Jaensch, of Marburg, and D. Werner Gruehn, of Berlin.

PART VII—HISTORY OF THE PSYCHOLOGY OF FEELING AND EMOTION

A vague and general article by G. S. Brett, of Toronto on this subject explains the origin of research and terms rather than giving us a logical sequence of emotional research and theory.

PART VIII—EMOTION IN RELATION TO EDUCATION

A very amusing and emotionally stimulating paper by John S. Terry of New York City is given on "Training the Emotions". Mr. Terry, perhaps inadvertently, gives us a quotation from William James which supplies a splendidly terse criticism of nearly all the articles on emotions which precede Mr. Terry's in the present volume. James, after reading the classics on the subject of emotion said that he would as lief read verbal descriptions of the shapes of rocks in a New England field.

Another paragraph from Mr. Terry's article furnishes an excellent prescription which psychologists interested in this field might well make note of. Says Terry:

> "Of course I'm rather late in urging training of the emotions. Christ did it about two thousand years ago. I feel He would have had more success with His doctrines if St. Paul and some of His other followers had not intellectualized them. Saul's conversion left him still a man of intellect, and he wrote too many letters."

Paraphrasing Mr. Terry, the reviewer would say that the academic psychologist's conversion to an alleged scientific interest in emotion has left him still a man of the classroom and he writes too many articles.

WILLIAM M. MARSTON.

Hollywood, California.

SOCIAL PSYCHOLOGY. THE PSYCHOLOGY OF POLITICAL DOMINATION. By Carl Murchison, Professor of Psychology. Worcester: Clark University Press, 1929. Pp. x+210.

This book is published in the International University Series. It is a noteworthy contribution to theoretical social psychology. Problems in the psychology of political domination are discussed in the light of a general notion of individual differences (*I-D's*). The conclusions reached by the author have deep implications for theoretical social psychology. A consideration of the following brief interpretative summary of the contents of the book will reveal the common theme (*I-D's*) that unites the three major divisions. (I) I-D's are the clues to fugitive social behavior patterns. (II) Historical political theories must meet the test of the I-D's (*e.g.*, democracy does not). (III) The theory of political domination (and of social psychology) can be derived only after application of the I-D's principle. The third proposition, a very important one, deserves close attention. It advocates the discarding of obsolete, primary notions of social psychology and the substitution of a basic notion of

individual differences. Instincts (presupposed), drives, social forces, social cohesion-disintegration, individual-group are all to be abandoned.

The author's fundamental contribution lies in his (genetic) arrangement of social behavior-patterns, in the first part of the book. In this stimulating and original section, several types of social behavior-patterns are analyzed and described as being "very fugitive in form, but that a succession of changing names and changing forms really brings about no significant change in individual relationships." It is repeatedly affirmed that the "essential factors are the factors that make for inequality in these various forms of behavior, and such factors are the true subject-matter of social psychology". For instance, the essential factors in the social behavior patterns of international relations are described in terms of the I-D's, accounting thus for the victor and vanquished, the mighty and weak. But this theory of *fugitive* forms is puzzling. It apparently leads to the conclusion that social changes do not result in significant changes in "individual relationship". Most of the behavior patterns are chronologically arranged as in the case of international relations: blood revenge, war, balance of power, and league of nations, so that the conclusion is a necessary one. Anyhow, the premise that individual relationships do not change cuts against the possibility of social change. To test this premise and the conclusion, a critical proportion derived from the analysis of a different set of social behavior patterns, control over the labor of others, may be examined. According to the theory of fugitive forms that individual relationships do not change, slaves are to owners as employees are to employers. But are the individual relationships identical? Murchison does not hold "that these behavior patterns have invariably occurred in this chronological order" so that slavery may not be an antecedent of employment in the course of evolution of the control over the labor of others. Furthermore, employment is to be found in modern societies and is characterized by individual relationships that are highly complicated, dynamic, and multiform. For developmental social psychology the issue is a fundamental one. Looking at this question of the fixity of the individual relationships (fugitive form) from the developmental attitude, the problem of the social psychologist is turned into a series of qualitative and quantitative analyses of social phenomena in terms of the I-D's (which is only one analytic method). In all levels, stages, or what not in the development or variation in social behavior patterns, there are I-D's and their statistical norms progressively become more and more intricate. The I-D's are transformed and there are simultaneous changes in individual relationships. A mathematical description of social changes would disclose occasional emergents, sharp shifts in the combinations of elements and concomitant variations and complications in the individual relationships. Whether or not the arrangement of social behavior patterns be chronological or genetic, a study of similar patterns cannot but lead to the conclusion that with the growth and decline of social behavior patterns there is a continual transformation of the I-D's and

synchronous change in individual relationships. An understanding of the transformation of the I-D's rests upon a further examination of the changes in social behavior patterns.

NATHAN ISRAELI.

Columbia University.

INTRODUCTION TO SOCIAL PSYCHOLOGY. MIND IN SOCIETY. By Radhakamal Mukerjee and Narendra Nath Sen-Gupta. (With a Foreword by Jerome Davis, General Editor of this series, Heath Social Relation Series, and an Introduction by Robert M. Yerkes.) Boston: D. C. Heath and Company, 1928. Pp. xv+304.

This introduction to social psychology by a psychologist and an economist-sociologist, both Indian scientists, presents several new problems in social psychology. It embodies much of the standard American work. At the outset, various viewpoints that have approached social phenomena are outlined. The view of the authors is based on McDougall, Woodworth, and Freud for the most part, and several sociologists and anthropologists are drawn upon. In the study of the psychology of culture, of social change, and of progress, the field of social psychology is extended. General psychological aspects of change, progress, and continuity over generations of social and cutural heritage are discussed. An ideal basis for social harmony and industrial equilibrium is found in Regionalism.

Here, then, are many descriptive aspects of mind in society, or reactions to group-stimuli, culture-stimuli, of the nature and emergence of various groups. From such description to accurate analysis of given situations would be another step that would involve observation and controls with, perhaps, the aid of laboratory experimentation. Limits of such scientific study are determinable only by actual trials and attempts. The descriptive social psychology of the authors is rich in suggestions for research.

A thorough study of the frequency, size, genesis, nature, and end of crowds is suggested by the observation of "not less than seventeen such crowds, of varying size, in one of the principal thoroughfares of Calcutta". Varieties of the social environment are said to be determined by number, time, and space factors. Such factors would serve as convenient indices of group activity, for measurement of various social gatherings. The different crowds enumerated here: stationary, milling, moving, active, and emotional, could perhaps be formed in the laboratory with all sorts of variations. Ingenious investigators could perhaps obtain experimental data on the question of the "stability and complex evolution of group life". A law of the stability of a group is formulated. It would "depend upon whether a specific value, $w$, is experienced and ascribed to a group as such by the individuals". The relation between individuals' stability-coefficients and that of the group could perhaps be found. Among other interesting questions studied by the authors are self-forgetfulness of the individual in the crowd, resistance to crowd psychosis, social neuroses, predisposition to crowd influence, crowd mentality, sex differences in

crowds, isolation, incipient and reciprocal reactions. All these could serve as starting points for experimental and empirical observations.

NATHAN ISRAELI.

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THE PSYCHOLOGY OF LANGUAGE. By Walter B. Pillsbury, Ph.D., Professor of Psychology in the University of Michigan, and Clarence L. Meader, Ph.D., Professor of Linguistics in the University of Michigan. New York and London: D. Appleton and Company, 1928. Pp. xi+306; figs. 14. Price, $3.00, and worth it.

This is a fundamental treatise on a subject as fundamental as any in the science of psychology, and its analysis of this subject is worthy the reputation of its authors, one of whom wrote, among other books, a work on attention which is well nigh a "classic"—whatever that really is. The "blurb" claims that it is "the first book" on this one of the most intricate of our mental functions, which perhaps is claiming more than it might claim, although in the letter of its words probably true; certainly no better or more complete treatise has been put together. On every page it bears the proof of deep knowledge of this wide subject, and painstaking thoughtful exposition—a constructive monograph.

There are a dozen chapters, eight of which were written by Pillsbury and four (the first, the third, and the last two) by Meader, whose psychology is that of the professional. The chapter-captions run thus: "The scope of language-study; the nervous mechanism of speech; the speech-organs; the senses involved in speech; mental processes in speech; motor processes in speech; the origin of languages; language-receptors: reading and listening; thought and language: words and their meaning; the mental antecedents of speech; sound-changes in language; and syntax."

Two of the most interesting chapters for the psychologist would seem to be that on mental processes and that on words and their meanings. They set forth in convenient form Doctor Pillsbury's theory of thought which "combines in a measure the advantages of each of the others [those of Max Müller and Titchener, and that of Stout, Binet, Külpe, Woodworth] and shall at the same time escape most of their disadvantages". "All the four theories of thought with which we started may be said to fall into one. Thinking may go on in words or in images equally well, but that which makes both images and words capable of carrying thought is not their peculiar structure but their reference, and the reference in either case is not to other words or images, but to types, to organized experiences, and to their representatives"—in short to their *meanings*, essence of thought, as of all other sorts of intellectual process.

One misses from this, as from some other expositions of meaning and of thought, all reference to subconscious mental processes; in fact the term is not in the complete index at all, nor is "unconscious". Notwithstanding, they certainly play an indispensable part in thinking, as they are seen to do most plainly in "intuition". We may suspect that

Professor Pillsbury remains adherent as a "bitter-ender" to the old-time logical but wholly fallacious conclusion that an "unconscious ideational process involves a self-contradiction". If a current idea of mind interferes with one's business of syllogistic logic, why not give up the business? The other viewpoint seems almost as misleading and as contrary to fact as does the opposite persistence of the Watsonian behaviorists (materialists if ever anyone made himself a materialist) that a form of social physiology is psychology. It is a shame that in this (relatively) enlightened age definitions, mere definitions should continue to be allowed to handicap the real understanding of psychomotor processes as they really are.

"Thoughts hardly to be packed into a narrow act,
Fancies that broke through language and escaped."

If modern physiological psychology shows us beyond peradventure anything at all, verily it proves that there is sometimes no assignable line of demarcation at all between a mental process and a neuronal process in a human brain. Quibbling over definitions only impedes understanding or even quite thwarts it decade after decade. Nature should not be so circumscribed by an inconsequential adherence to a mechanical logical consistency often as fanciful even as the measurement or the description of mind by the "higher" mathematics.

This observation foregoing, longer than was premeditated, certainly is relevant to every discussion of meaning that all but ignores the identity of cerebral nerve-processes (perhaps especially those classed as kinesthetic) and ideas, conscious, coconscious, subconcious, or unconscious! Without this intimate relationship we can progress no further than we have progressed—in the humble opinions of the present reviewer. It is partly such verbal quibbling as has been referred to, redolent of the scholasticism of else idle men of the twelfth century, that sometimes makes psychology a source of innocent merriment to business men, stock brokers, psychiatrists, engineers, jurists, editors and such other intelligent folk.

Our authors are not at all didactic in regard to the origin of languages and the development of articulate speech and of gesture, but they are all the more instructive on that account. Having occurred at a very early stage in emergent humanity's life, this origin seems to be forever buried in the unwritten mental history of our kind. "Some [vocal sounds] were probably imitative sounds that early became specialized as the onomatopeic theory demands. In other cases, the sound that came to represent an object or an act was probably the result of pure chance, as can be seen in the case of the development of certain slang expressions. . . . Starting from relatively few roots, the meanings can be seen to undergo various sorts of changes that in the sum total may become very great in spite of the fact that each change is of itself very small. These shifts of meaning constitute the problem of the semasiologist. . . . Once a meaning is established it is fairly easy to study its spread, but the original fixing of meanings took place for the most part before the recorded beginnings of language study."

This is an important constructive work that should not be long lacking in every psychological or philological library.

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DOMESTIC DISCORD. By Ernest R. Mowrer, with the Collaboration of Harriet R. Mowrer. Chicago: The University of Chicago Press, 1928. xvii+277. $3.00.

Marriage as an unstable institution is acquiring an increasing literature to which Professor Mowrer has made two contributions. His new book is addressed primarily to social workers and represents an attempt to evaluate case work as now employed in problems of domestic discord, and to suggest further refinements of technique, and even the development of a new one. Dr. Mowrer effectively demonstrates that current and customary methods of recognizing and diagnosing marital discord are casual, inadequate and, so far as treatment is concerned, ineffective, though it always should be remembered in reading that all of his data are from agencies of one city, Chicago, and that practices (and perhaps results, too) vary from city to city. It is his contention that in handling domestic discord cases family agencies in the past have tended to be little more than "diagnostic information bureaus", with workers seeking to determine the "problems" presented in each given case, and then referring the case to a proper agency for treatment. Probably many experienced and conscientious case workers would not accept this without challenge. Certainly there are case workers (if not in Chicago, at least elsewhere) who are in accord with Gordon Hamilton's statement that "the modern case worker, like the modern educator, sees in the family situation not a long list of problems, nor even a long list of potential services but several positive projects which bring the family's capacities into play". In placing before the reader his conception of the family as a group of interacting personalities, and discord as a process of this interaction, Dr. Mowrer, in the opinion of the writers, underestimates the extent to which the position which he develops has already been assumed by experienced case workers. His terminology may be different, and even more precise, but his theory is not unique. This is not to deny many of his criticisms of current methods of handling discord cases. He does demonstrate shortcomings in case recording, and one value of the book may be that it will spur workers to better case recording. Dr. Mowrer certainly demonstrates the inadaptability of case records in their present forms to analysis statistically.

It is the author's suggestions looking toward more adequate diagnosis and treatment of domestic discord cases that will attract more attention than his discussion of the inadequacy of present practices. Dr. Mowrer presents the method of analysis devised and successfully used by Mrs. Harriet Mowrer, consultant in domestic discord for the Jewish Social Service Bureau of Chicago. Her methods of interviewing and analysis are given in chapters 5, 6 and 14, and they reveal her undoubted skill as

a case worker, but that they represent guides for less skilful workers is not demonstrated. The basic question is whether or not what purports to be an improvement in technique, as used and outlined by Mrs. Mowrer, is actually such, and accordingly of use to other workers, or is in reality merely a reflection of Mrs. Mowrer's personal skill, somewhat independent of her formal methods. Would other workers, less capable than she, using her methods achieve higher degrees of success? The method of Mrs. Mowrer as outlined in this volume needs, we feel, more detail if it is to be of service to the average case worker. In its present form it calls for too much selective judgment in the materials utilized. It is no more than a method of case recording. What really is needed before our own doubts can be settled is that Mrs. Mowrer should set down in great detail the steps she uses in her interviews and in arriving at her diagnoses and treatments. She might well expand her outline along the lines followed by psychiatric case workers in the acquisition of their data. There may be something in her procedures that is of use to others, and which is unique. It does not stand out from the rather schematic and formal presentation in Dr. Mowrer's new volume. What the author says may be stimulating to the experienced worker, in that it raises questions, but there is little that will be helpful to the great army of case workers. The book, then, represents a contribution that cannot be passed without reading by those interested in case methods, albeit a somewhat unconvincing one so far as positive contributions are concerned.

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# NEW BOOKS RECEIVED

*(This notice does not preclude the book from further notice or review.)*

*The Layman Looks at Doctors.* By S. W. and J. T. Pierce. Harcourt, Brace and Company, New York, 1929. Pp. 251. Price $2.00.

*Jewish Influence in Modern Thought.* By A. A. Roback. Sci-Art Publishers, Cambridge, Mass., 1929. Pp. xx+506. Price $3.75 until January, 1930, $4.50 after that date.

*The Psychology of the Adolescent.* By Leta S. Hollingworth. D. Appleton and Company, New York, 1928. Pp. xii+227. Price $2.50.

*The Child's Conception of the World.* By Jean Piaget. Harcourt, Brace and Company, New York, 1929. Pp. 397. Price $4.00.

*An Anthology of Recent Philosophy.* By Daniel Sommer Robinson. Thomas Y. Crowell Company, New York, 1929. Pp. xi+674. Price $4.00.

*Children's Behavior and Teachers' Attitudes.* By E. K. Wickman. The Commonwealth Fund Division of Publications, New York, 1928. Pp. 247.

*How to Do Research in Education.* By Carter V. Good. Warwick and York, Baltimore, 1928. Pp. 298.

*Psychology As Science.* By H. P. Weld. Henry Holt and Company, New York, 1928. Pp. xi+297. Price $2.50.

*Contributions to Psychiatry, Neurology and Sociology.* (Dedicated to the late Sir Frederick Mott.) Edited by J. R. Lord. H. K. Lewis and Company, London, 1929. Pp. xii+401. Price 21s.

*The Lost Child.* By Rahel Sanzara. Longmans, Green and Company, New York, 1929. Pp. 359. Price $2.50.

*The Adolescent: His Conflicts and Escapes.* By Sidney I. Schwab and Borden S. Veeder. D. Appleton and Company, New York, 1929. Pp. v+365. Price $3.00.

*Psychology and Industrial Efficiency.* By Harold E. Burtt. D. Appleton and Company, New York, 1929. Pp. xviii+395. Price $3.00.

*Studies of Savages and Sex.* By Ernest Crawley. E. P. Dutton and Company, New York. Pp. ix+300. Price $4.50.

*Instinct and Personality.* By A. Campbell Garnett. Dodd, Mead and Company, New York, 1928. Pp. 216. Price $3.00.

*The Science of Psychology.* By Raymond Holder Wheeler. Thomas Y. Crowell Company, New York, 1929. Pp. xvii+556. Price $3.75.

*Psychophysiology.* By Leonard T. Troland. D. Van Nostrand Company, New York, 1929. Pp. xix+429. Price $4.00.

*The Psychological Register.* Edited by Carl Murchison. Clark University Press, Worcester, Mass., 1929. Pp. ix+580. Price $6.00.

*Sterilization for Human Betterment.* By E. S. Gosney and Paul Popenoe. The Macmillan Company, New York, 1929. Pp. xviii+202. Price $2.00.

*Common Principles in Psychology and Physiology.* By John T. Maccurdy. The Macmillan Company, New York, 1928. Pp. xvii+284.

*The History of Psychology.* By W. B. Pillsbury. W. W. Norton and Company, New York, 1929. Pp. 326.

*The Child of Circumstance.* By Albert Wilson. William Wood and Company, New York, 1929. Pp. xx+420. Price $6.00.